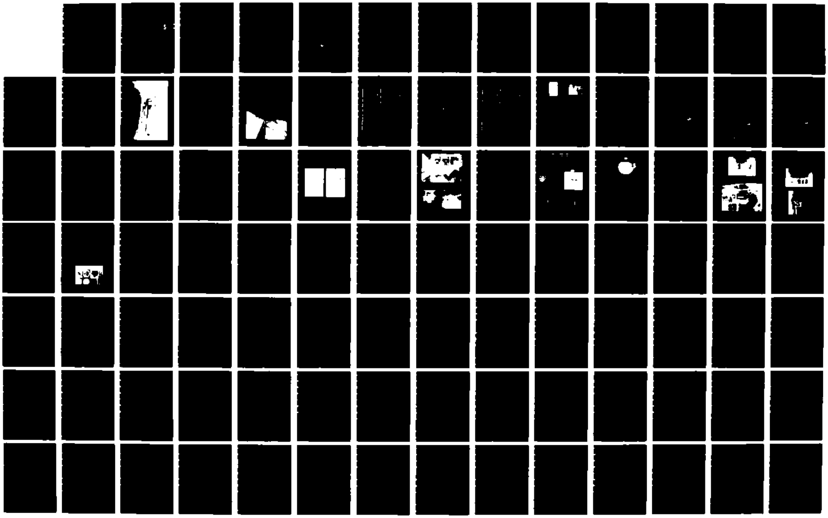
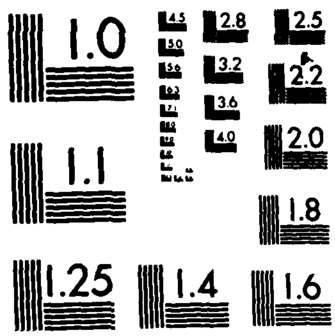
AD-A159 898 INTERNATIONAL CIVIL AVIATION ORGANIZATION HELICOPTER NOISE MEASUREMENT RE. (U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR. 1/5

UNCLASSIFIED J S NEWMAN ET AL. SEP 85 FAA/EE-85-6 F/G 14/2 NL





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

(12)

U.S. Department
of Transportation

Federal Aviation Administration

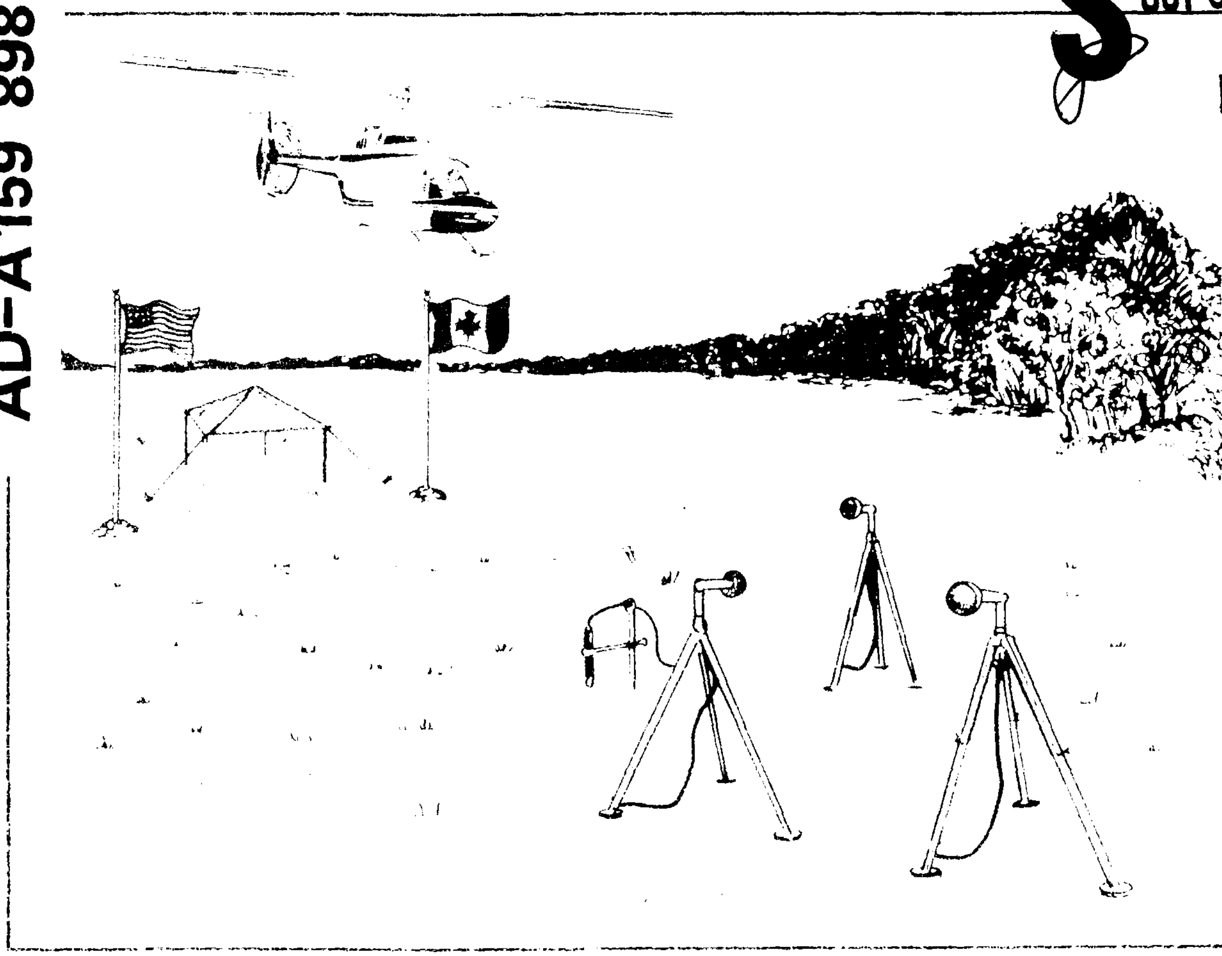
International Civil Aviation Organization
Helicopter Noise Measurement
Repeatability Program

U.S. Test Report

Report No. FAA-EE-85-6
September 1985

Office of Environment
and Energy
Washington, D.C. 20591

Bell 206L-1
Noise Measurement Flight Test



85 10 7 001

The United States Government does not endorse products or manufacturers. Trade or manufacturers' names are used only as necessary in documenting the subject test program.

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
FAA-EE-85-6	AD-A159 898	

4. Title and Subtitle	5. Report Date
International Civil Aviation Organizatton Helicopter Noise Measurement Repeatability Program: U.S. Test Report, Bell 206L-1, Noise Measurement Flight Test	September 1985
	6. Performing Organization Code
7. Author(s) J. Steven Newman, Edward J. Rickley(1), Maryalice Locke(2)	8. Performing Organization Report No.
9. Performing Organization Name and Address Federal Aviation Administration, Office of Environment and Energy, Noise Abatement Division, Noise Technology Branch (AEE-120), 800 Independence Ave. S.W., Washington, D.C. 20591	10. Work Unit No. (TRAIS)
	11. Contract or Grant No.
12. Sponsoring Agency Name and Address Federal Aviation Administration, Office of Environment and Energy, Noise Abatement Division, Noise Technology Branch (AEE-120), 800 Independence Ave. S.W., Washington, D.C. 20591	13. Type of Report and Period Covered
	14. Sponsoring Agency Code

15. Supplementary Notes

(1) U.S. DOT Transportation Systems Center, Kendall Square, Cambridge, MA 02142
(2) ORI, Inc., 1375 Piccard Drive, Rockville, MD 20850

16. Abstract This document reports the findings of the U.S. test team's participation in the Helicopter Noise Measurement Repeatability Program (HNMRP) conducted under the direction of the International Civil Aviation Organization's (ICAO) Committee on Aviation Environmental Problems (CAEP) Working Group II (WG II). The FAA, as the U.S. test team, conducted the HNMRP noise measurement flight test program in concert with a separate measurement team from Canada. The U.S./Canadian flight test was held in August of 1984 at Dulles International Airport near Washington, D.C.

The principal objective of this international HNMRP is to refine noise certification testing requirements. Participating nations conducted the test programs on the same type helicopter, the Bell 206L-1 (or the acoustically equivalent 206L-3), using the same test procedures.

Analyses in this document include the investigation of source noise adjustments based on increases in noise level with advancing blade tip Mach number, the examination of relative source contributions in the helicopter acoustical spectrum, and source directivity for both in-flight and static operations.

This report contains helicopter noise definition information (useful in environmental impact analyses) for level flyovers at various airspeeds and altitudes, and ICAO takeoff and approach procedures. Data are also shown for a noise abatement operation involving dynamic changes in torque, rate of descent and airspeed. This report also provides information for the hover-in-ground effect, flight idle and ground idle static operations.

The results reported in this document will be combined with those of other HNMRP participant nations for evaluation by CAEP WG II.

17. Key Words	18. Distribution Statement
helicopter noise international noise standards ICAO/CAEP flight test	This document is available to the public through the National Technical Information Service, Springfield, VA 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
unclassified	unclassified	421	

Form DOT F 1700.7 (8-72) Reproduction of completed page authorized

ACKNOWLEDGEMENTS

The authors would like to thank the following individuals and organizations who contributed to the success of the measurement program and/or the production of this report.

1) Bell Helicopter, Textron, Ft. Worth Texas, which materially assisted the program effort by providing the test helicopter. In addition, Mr. Charles Cox of Bell, who provided invaluable assistance in preparation and coordination of the test program.

2) Ms. Kristy Beattie and Ms. Rowena Cross-Najafi (ORI, Inc.), for their assistance in many aspects of final report production.

3) Ms. Sharon Yoshikami (FAA AEE-120), for her assistance with deployment of direct read noise data acquisition systems, measurement site physical arrangements, and assistance in preparing radar data tables.

4) Mr. Dennis Levanduski (ORI, Inc), for his assistance in developing data appendix tables and electronic spreadsheet analyses.

5) Mr. Brad Beckman (Boeing Vertol Company), for his assistance in developing the photo-altitude electronic spreadsheet template.

International Civil Aviation Organization
Helicopter Noise Measurement Repeatability Program
US TEST REPORT
Bell 206L-1 Noise Measurement Flight Test

Page

LIST OF TABLES

LIST OF FIGURES

LIST OF FIGURES (Continued)

1.0 Introduction

This document reports the findings of the United States (U.S.) test team's participation in the Helicopter Noise Measurement Repeatability Program (HNMRP), which is being conducted under the direction of the International Civil Aviation Organization's (ICAO) Committee on Aviation Environmental Protection's (CAEP) Working Group II (WG II) in support of their interest in environmental standards development. The HNMRP is an international effort involving the active participation of Australia, Canada, the Federal Republic of Germany, France, Italy, Japan, the United Kingdom, and the United States. The Federal Aviation Administration (FAA), as the U.S. test team, conducted the HNMRP noise measurement flight test program in concert with a separate measurement team from Canada. The jointly conducted U.S./Canadian flight test was held in August of 1984 at Dulles International Airport near Washington, D.C.

The principal objective of the international HNMRP is to refine procedures and resolve technical issues associated with helicopter noise certification testing requirements. Such refinement will facilitate the certification testing of countries working separately. Participating ICAO CAEP WG II nations set out to achieve this goal by conducting the noise measurement flight test programs on the same model helicopter, the Bell 206L-1 (or the acoustically equivalent Bell 206L-3), and by using the same procedures.

The results reported in this document will be combined with the findings of other participating nations for an overall HNMRP evaluation. Results from this multi-nation evaluation will be presented to CAEP which will consider the results as they formulate noise standard revisions to be submitted to the ICAO Governing Council.

This report contains helicopter noise information for level flyovers at various speeds and altitudes and ICAO takeoff and approach procedures. Additionally, data are shown for a noise abatement approach operation involving dynamic changes in torque, rate of descent, and airspeed. This report also provides information for hover-in-ground effect, flight idle, and ground idle static operations.

This report is organized as follows: Sections 1 through 4 document the test program and the systems utilized; Sections 5 through 7 describe the data reduction process; Section 8 contains analyses and discussion of the noise data; and data tables appear in Appendices A through O.

3.2.3 Approach Test Series C

The approach reference procedure, as stated in ICAO Annex 16, Chapter 8, Section 8.6, are as follows:

a) the helicopter shall be stabilized and following a 6 degree approach path;

b) the approach shall be made at a stabilized airspeed equal to the best rate of climb speed Vy, or the lowest approved speed for the approach, whichever is the greater, with power stabilized during the approach and over the flight path reference point, and continued to a normal touchdown;

c) the approach shall be made with the rotor speed stabilized at the maximum rpm for certificated approach;

d) the constant approach configuration used in airworthiness certification tests, with the landing gear extended, shall be maintained throughout the approach reference procedure; and

e) the mass of the helicopter at touchdown shall be the maximum landing mass at which noise certification is requested.

An airspeed of 57 knots was established as Vy for approach operations.

This approach operation is graphically depicted in Figure 10.

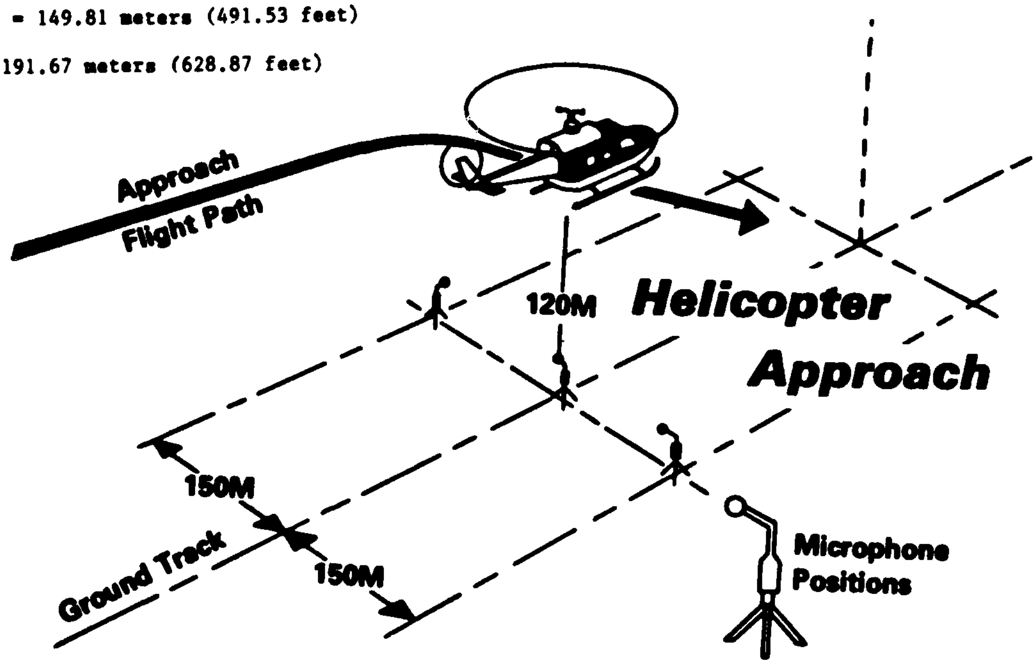
FIGURE 10

Reference Position Information:

Altitude over centerline center = 120 meters (393.72 feet)

CPA centerline center = 149.81 meters (491.53 feet)

CPA sideline sites = 191.67 meters (628.87 feet)



3.2.2 Takeoff Test Series B

The takeoff reference flight procedure, as stated in ICAO Annex 16, Chapter 8, Section 8.6, is as follows:

a) the helicopter shall be stabilized at the maximum takeoff power and at the best rate of climb along a path starting from a point located 500 meters forward of the flight path reference point, at 20 meters (65 feet) above the ground;

b) the best rate of climb speed Vy, or the lowest approved speed for the climb after takeoff, whichever is the greater, shall be maintained throught the takeoff reference procedure;

c) the steady climb shall be made with the rotor speed stabilized at the maximum normal operating rpm certificated for takeoff;

d) a constant takeoff configuration selected by the applicant shall be maintained throughout the takeoff reference procedure except that the landing gear may be retracted; and

e) the mass of the helicopter shall be the maximum takeoff mass at which noise certification is requested.

The pilots were asked to anticipate the rotation marker and apply maximum takeoff power early so that the helicopter would intercept a direct climb path, projecting from the 500 meter rotation point, 20 meters above the ground.

This takeoff operation is graphically depicted in Figure 9.

FIGURE 9

Takeoff Reference Profile:

IAS = Vy 57 knots

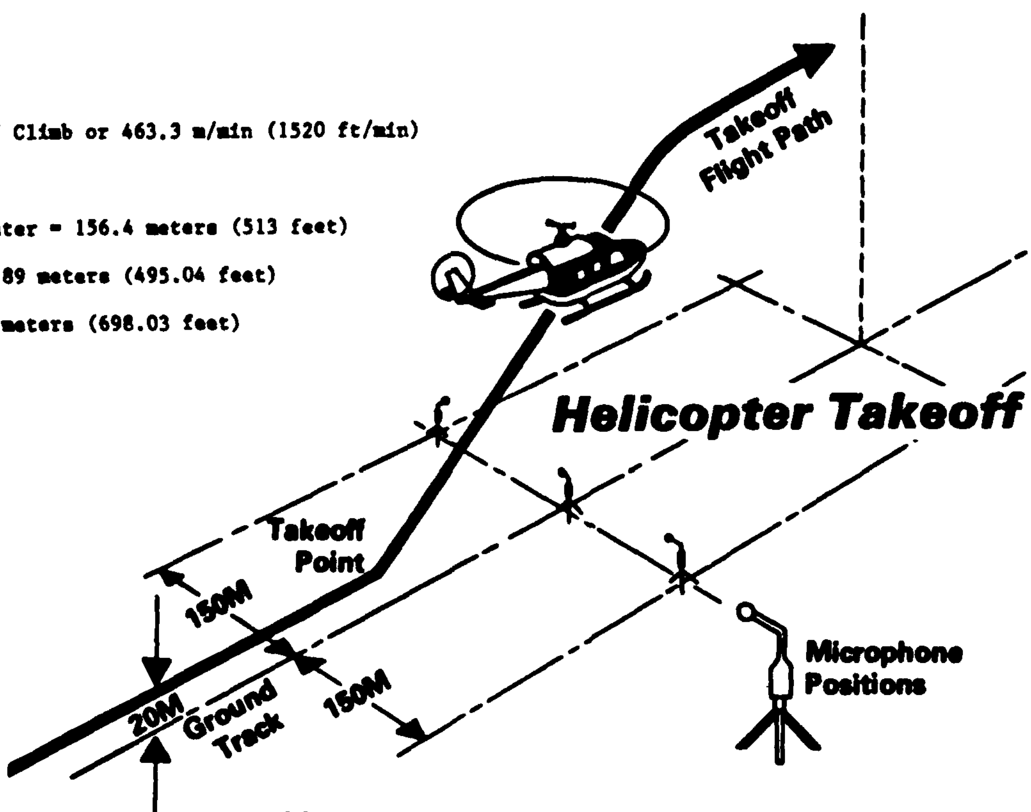
Rate of Climb = Best Rate of Climb or 463.3 m/min (1520 ft/min)

Climb angle = 15.26 degrees

Altitude over centerline center = 156.4 meters (513 feet)

CPA centerline center = 150.89 meters (495.04 feet)

CPA sideline sites = 212.75 meters (698.03 feet)



3.2.1 Flyover Test Series A

The overflight reference procedures, as stated in ICAO Annex 16, Chapter 8, Section 8.6, are as follows:

a) the helicopter shall be stabilized in level flight overhead the flightpath reference point at a height of 150 meters (490 ft);

b) a speed of 0.9 Vh or 0.9 Vne, whichever is the lesser, shall be maintained throughout the overflight reference procedure; (Note: Vh is the maximum speed in level flight at power not exceeding maximum continuous power. Vne is the never exceed speed.)

c) the overflight shall be made with the rotor speed stabilized at the maximum normal operating rpm certificated for level flight;

d) the helicopter shall be in cruise configuration; and

e) the mass of the helicopter shall be the maximum takeoff mass at which noise certification is requested.

The reference airspeed selected for the level flyover operation was 117 knots, which is 0.9 Vh.

This flyover operation is depicted graphically in Figure 8.

FIGURE 8

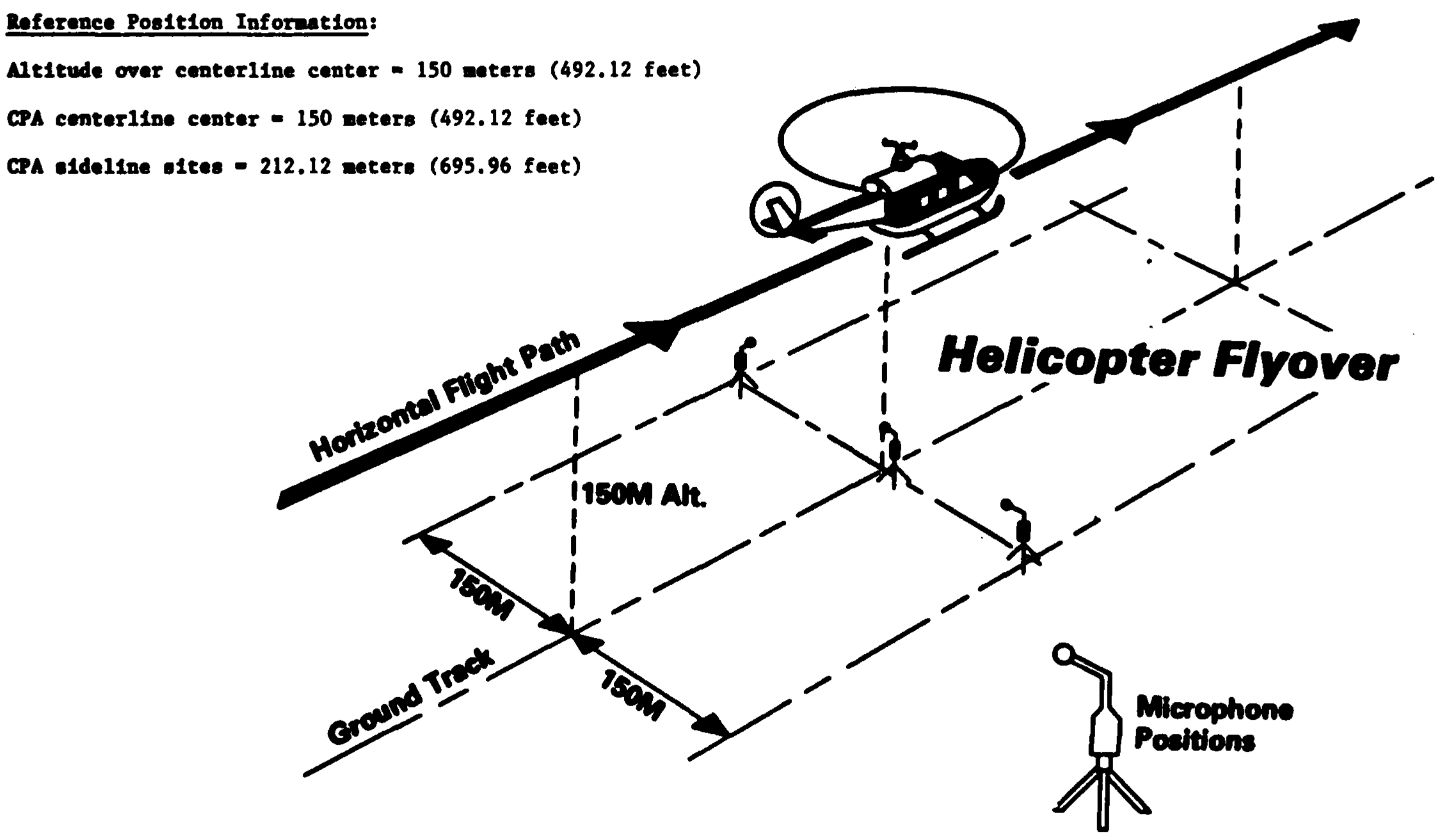


Table 2
Test Series Schedule

US/CANADIAN TEST, HELICOPTER NOISE MEASUREMENT REPEATABILITY PROGRAM

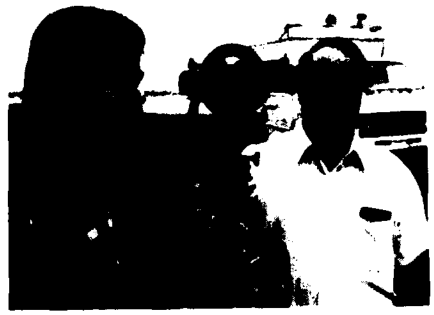
TEST SERIES	TEST DATE	EVENT NO.s	PILOT	** OCRN	OPERATION	TARGET IAS	ALTITUDE	SERIES START TIME	SERIES STOP TIME
A	8-27	1- 8	1	1	LFO 0.9VH	117	150m(492')	8:35A	8:55
G	8-27	9-16	1	1	LFO 0.9VH	177	300m(984')	9:12	9:31
H	8-27	17-21	1	1	LFO 1.0VH	130	150m(492')	9:35	9:51
I	8-27	22-26	1	1	LFO 0.8VH	104	150m(492')	9:53	10:06
J	8-27	27-31	1	1	LFO 0.7VH	91	150m(492')	10:58	11:13
B	8-27	33-52	1	1	ICAQ T/O, VY	57	START AT 66' AGL	11:29A	12:47P
C	8-27	32-50	1	1	6° ICAO APP. VY	57	START AT 700'AGL	11:26A	12:40P
D	8-27	N/A	1	1	STATIC FI	N/A	N/A	1:35P	2:10
E	8-27	N/A	1	1	STATIC GI	N/A	N/A	1:30	2:05
F	8-27	N/A	1	1	STAT HIGE	N/A	SKIDS 5'AGL	2:10	2:25
AA	8-28	1-8	2	1	LFO 0.9VH	117	150m(492')	8:22A	8:37
BB	8-28	11-25	2	1	ICAO T/O, VY	57	START AT 66' AGL	8:47	11:11
CC	8-28	9-24	2	1	6° ICAO APP. VY	57	START AT 700 AGL	8:42	11:08
AZ	8-28	26-30	1	2	LFO 0.9 VH	117	150m(492')	11:24	11:36
BZ	8-28	32-40	1	2	ICAO T/O VY	57	START AT 66' AGL	11:49	12:19P
CZ	8-28	31-39	1	2	6° ICAO APP. VY	57	START AT 700' AGL	11:39	12:16
K	8-28	41-46	1	1	6° APP. VY NO GUIDE	57	START AT 700' AGL	12:42	1:06
M	8-28	47-51	1	1	BELL QUITE APP.	110 TO 45	START AT 1000 AGL	1:10	1:29
KK	8-28	52-57	2	1	6° APP. VY NO GUIDE	57	START AT 700' AGL	2:12	2:37
MM	8-28	58-62	2	1	BELL QUIET APP.	110 TO 45	START AT 1000' AGL	2:40	2:56
BY	8-29	1-17	2	2	ICAO T/O VY	57	START AT 66' AGL	8:24	12:07P
CY	8-29	2-18	2	2	6° ICAO APP., VY	57	START AT 700' AGL	8:16A	12:11P
DZ	8-29		1	2	STATIC FI	N/A	N/A	9:30	10:15
EZ	8-29		1	2	STATIC GI	N/A	N/A	9:30	10:10
FZ	8-29		1	2	STAT HIGE	N/A	SKIDS 5'AGL	10:30	10:45
AY	8-29	19-28	2	2	LFO 0.9VH	117	150m(490')	12:16P	12:58

** OCCURRENCE - First or second time pilot flew operation.

FIGURE 6

Crew with VASI system

FIGURE 7



FAA personnel with a surveying theodolite

3.0 Description of Test Series

The test series conducted during the U.S./Canadian HNMRP flight test fall into two catagories. The first is the core test program operations, consisting primarily of noise certification operations which each HNMRP participant was asked to conduct. The second part contains optional operations, which were selected to expand the potential range of comparative analyses. Table 2 is a listing of the test series operations in the order they were conducted. Although the test series operations can be divided into two thematic areas, they were actually interspersed in order to achieve flight test time and fuel efficiency.

3.1 Identification of Test Series

Each test series represents a series of events of the same operation type, pilot, and occurrence. Each noise event is identified throughout this document by a one or two letter prefix which corresponds to a particular series description. This letter is followed by a number which represents the numerical sequence of the event (i.e., A1, A2, A3,...etc.) as it occurred in the overall program chronologically. The numbering of events was started at "1" each day.

In the case of static operations the individual events are referenced to the acoustical emission angle in addition to the letter prefix (i.e., F0, F45, F90, F135, F180, F225, F270, F315).

Table 2 also lists the test series target operational parameters, along with approximate start and stop times. Actual operational parameters and position information for specific events are identified in the appendices of this document.

3.2 Core Test Operations

The core test operations were conducted in accordance with the Test Plan for the ICAO HNMRP and ICAO Annex 16 Chapter 8 requirements as described below.

FIGURE 5

Noise Measurement and Photo Site Schematic

US/CANADA ICAO HELICOPTER NOISE REPEATABILITY TEST PROGRAM
DULLES INTERNATIONAL AIRPORT, 1984

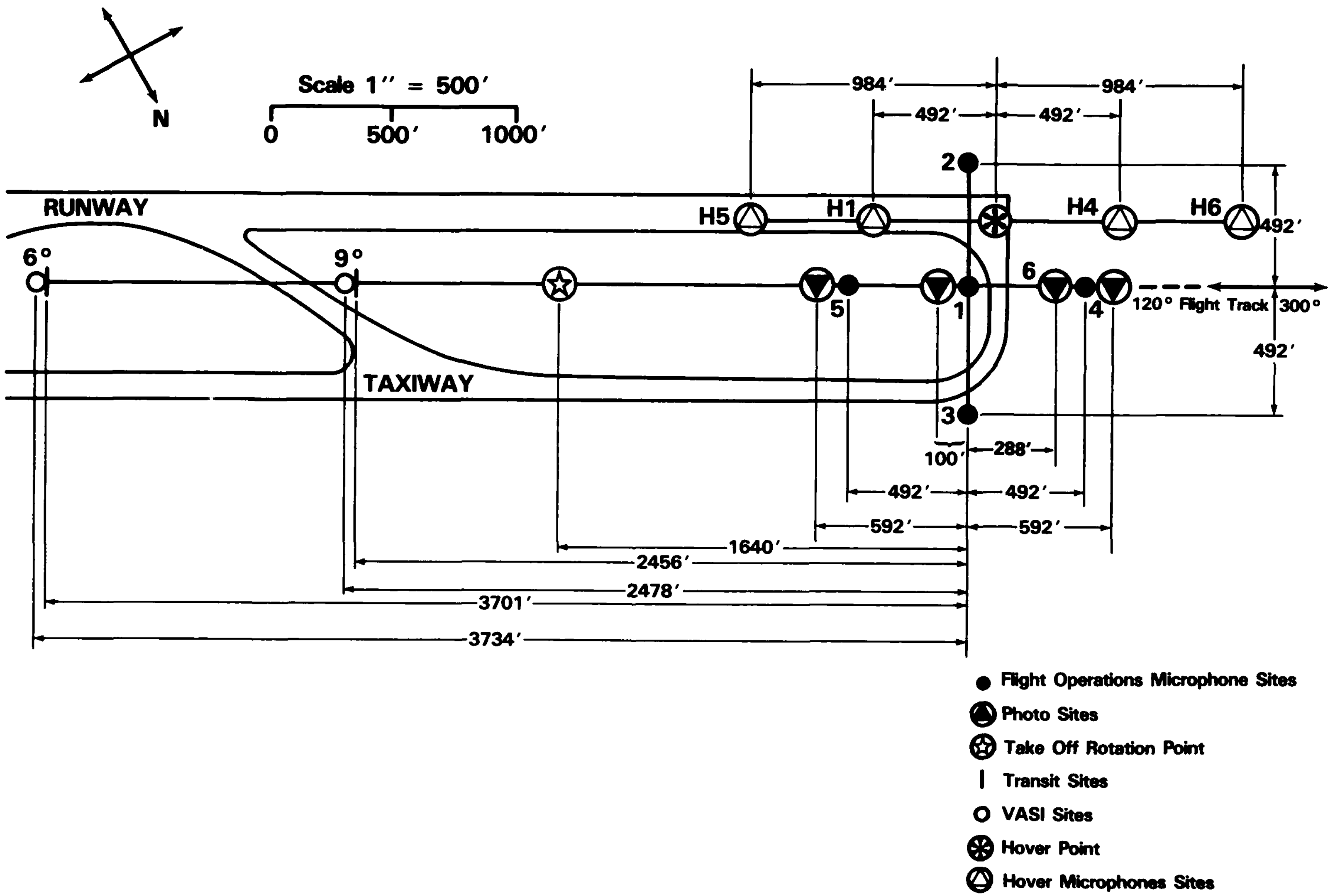


FIGURE 4

TEST COMMUNICATIONS

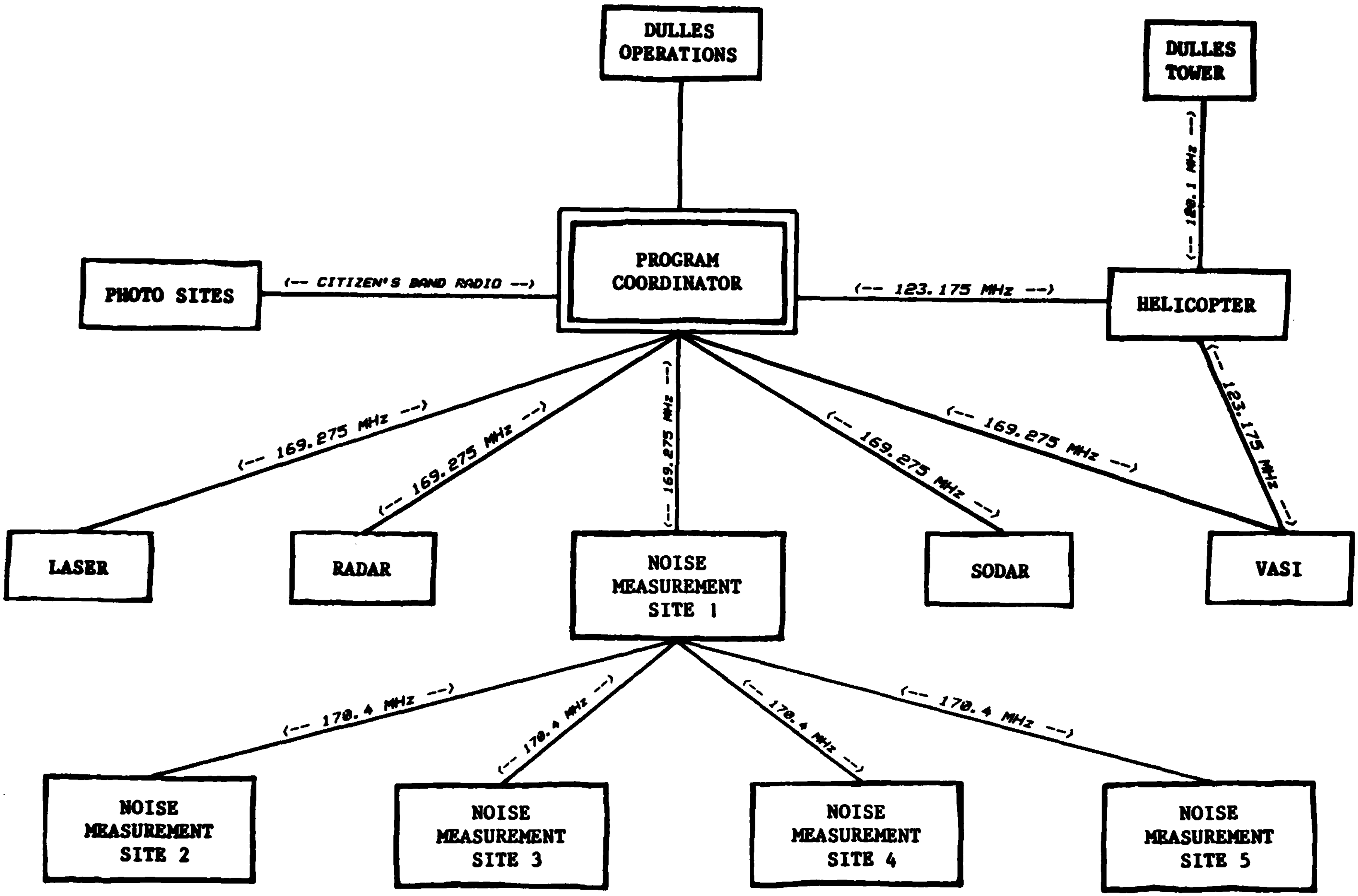
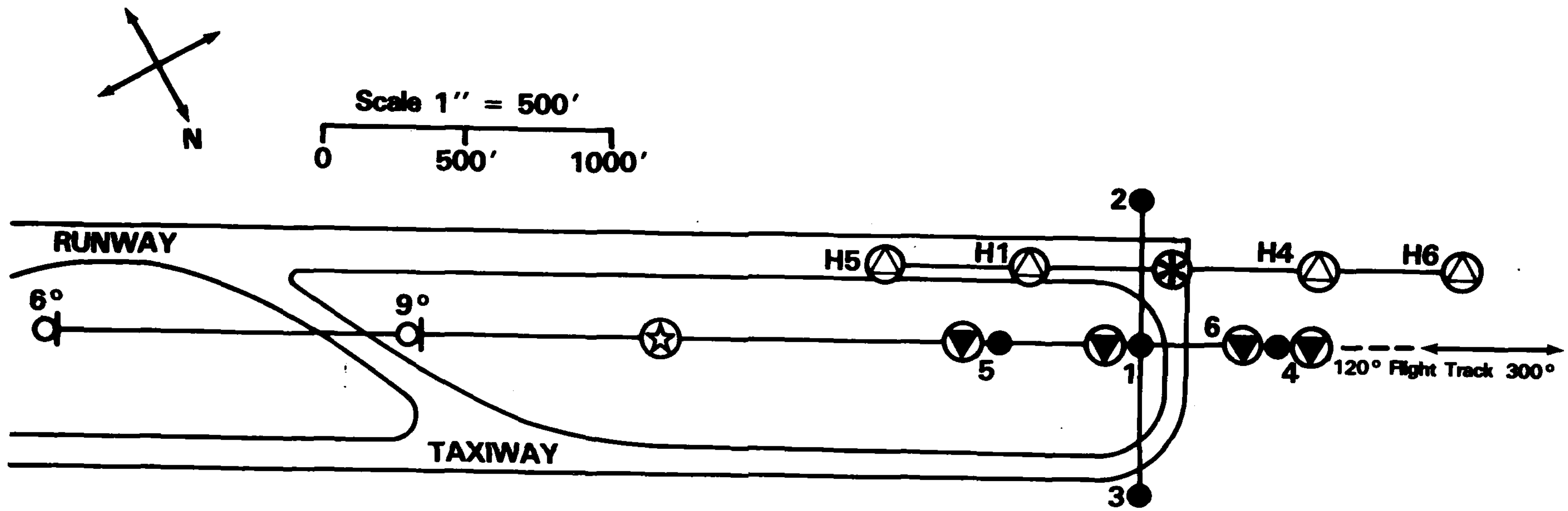


FIGURE 3

Noise Measurement and Photo Site Schematic

US/CANADA ICAO HELICOPTER NOISE REPEATABILITY TEST PROGRAM
DULLES INTERNATIONAL AIRPORT, 1984



Laser deployment
near threshold
runway 30

Site Altitude:

6H	311.9	P4	308.15
4H	307.9	4	306.35
1H	306.1	1	308.0
5H	404.4	P1	305.94
2	311.0	5	304.45
3	307.75	P5	304.5

- ● Flight Operations Microphone Sites
- Photo Sites
- Take Off Rotation Point
- | Transit Sites
- O VASI Sites
- Hover Point
- Hover Microphones Sites

The test area adjacent to the runway was nominally flat, with a ground cover of short, clipped grass, approximately 1800 feet by 2200 feet, and bordered on the north, south, and west by woods. Runway 12/30 was closed during the test, so there was minimum interference from commercial and general aviation. Airport traffic was diverted to runways approximately two and three miles east of the test site.

Figure 3 is a schematic diagram of the test site detailing the location of the nine microphone sites used during the test. The flight track centerline was located parallel to Runway 12/30 centered between the runway and the taxiway.

For flight operations three centerline microphone sites, sites 4, 1, and 5, and two sideline sites, sites 2 and 3, were deployed.

For static operations four microphone sites, 5H, 1H, 4H, and 6H, were situated along an extended line from the runway. Sites H1 and H5, the hard path sites, were located on the pavement of Runway 12/30, while sites H4 and H6, the soft path sites, were located just off the end of the runway.

2.5 Communication System

A central communications group, under the program manager, utilized a communications network involving several radio frequencies to coordinate the various data aquisition systems and to direct flight operations. Figure 4 is a schematic diagram of this network.

2.6 Flight Path Markers and the Approach Guidance System

Visual cues in the form of squares of plywood painted bright yellow with a black "X" in the center were positioned to define the takeoff rotation point. This point was located 500 meters (1640 feet) from the centerline microphone location. This array is depicted in the measurement site schematic in Figure 5.

Approach guidance was provided to the pilots for the ICAO 6 degree approaches by means of a Visual Approach Slope Indicator (VASI). The VASI was located at the point where the approach path intercepted the ground, a distance of 1128 meters (3701 feet) from centerline center site 1.

The VASI system used in the test was a three-light arrangement giving vertical displacement information within +/- 0.5 degrees of the reference approach slope. The pilot observed a green light if the helicopter was within 0.5 degrees of the approach slope, red if below the approach slope, white if above. A picture of the VASI system is shown in Figure 6.

In the case of verbal guidance approaches, FAA personnel operating a surveying theodolite (see Figure 7) advised the flight crew of deviations (exceeding 0.5 degrees) from the reference six degree flight path.

2.4 Test Site

The Test Plan for the ICAO HNMRP described the flight operations microphone array as an array consisting of a flight path centerline site and two sideline sites, arranged for certification testing as specified in Section 8.3 of Annex 16. A second centerline site, located 150 meters down range from the centerline center site, was to be added to this array. (This second site would then be positioned on the high altitude side of centerline center for takeoff operations.)

The microphone array for the static operations was specified as consisting of two sites, one located 150 meters from the hover point over a hard propagation path, the second site located 150 meters from the hover point over a soft (grass) propagation path.

The U.S./Canadian test followed the above specifications with the addition of:

for flyover operations - a third centerline site, located 150 meters up range from the centerline center site, and

for static operations - two sites, (one hard propagation - one soft propagation) each located 300 meters from the hover point.

The noise measurement testing area was adjacent to the approach end of Runway 12/30 at Dulles International Airport. The low ambient noise level, the availability of emergency equipment, and physical security made this location desirable. Figure 2 is a photograph of the test area.

FIGURE 2

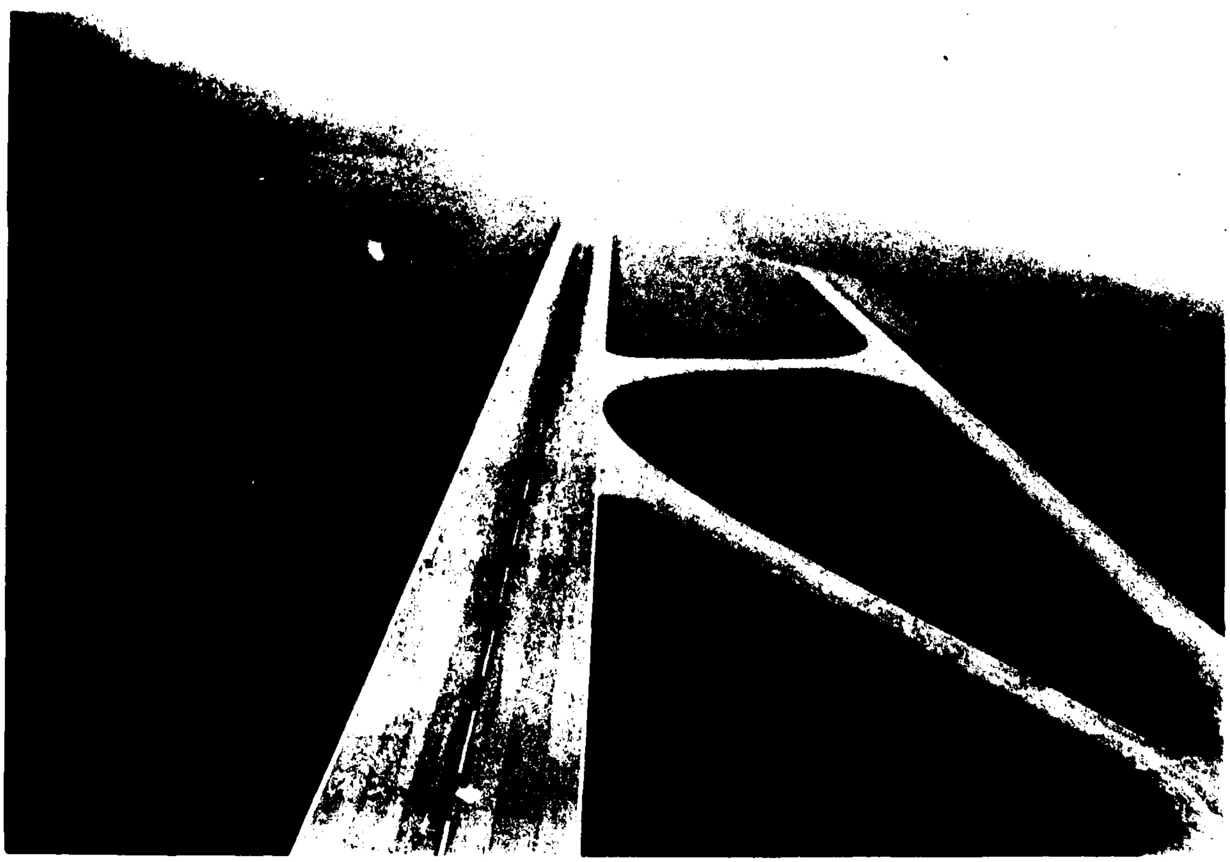


Table 1

HELICOPTER CHARACTERISTICS

HELICOPTER MANUFACTURER	BELL
HELICOPTER MODEL	206L-1, LONGRANCER II
ENGINE	ALLISON 250-C28B

EXTERNAL DIMENSIONS

OVERALL LENGTH (BOTH ROTORS TURNING)	13.02 M (42 FT., 8.5 IN.)
HEIGHT OVER TAIL FIN	2.75 M (9 FT., 0.25 IN.)
HEIGHT TO TOP OF ROTOR HEAD	3.05 M (10 FT., 0 IN.)
FUSELAGE MAX WIDTH	1.32 M (4 FT., 4 IN.)
STABILIZER SPAN	1.98 M (6 FT., 6 IN.)
MAIN DIAMETER	11.28 METERS (37.01 FT.)
TAIL DIAMETER	1.65 METERS (5.42 FT.)

WEIGHT

EMPTY, STANDARD CONFIGURATION	978 KG. (2,156 LB.)
MAX TAKEOFF WEIGHT	1,882 KG. (4,150 LB.)

PERFORMANCE (ISA AT TAKEOFF WEIGHT OF 1,837 KG. (4,050 LB.)

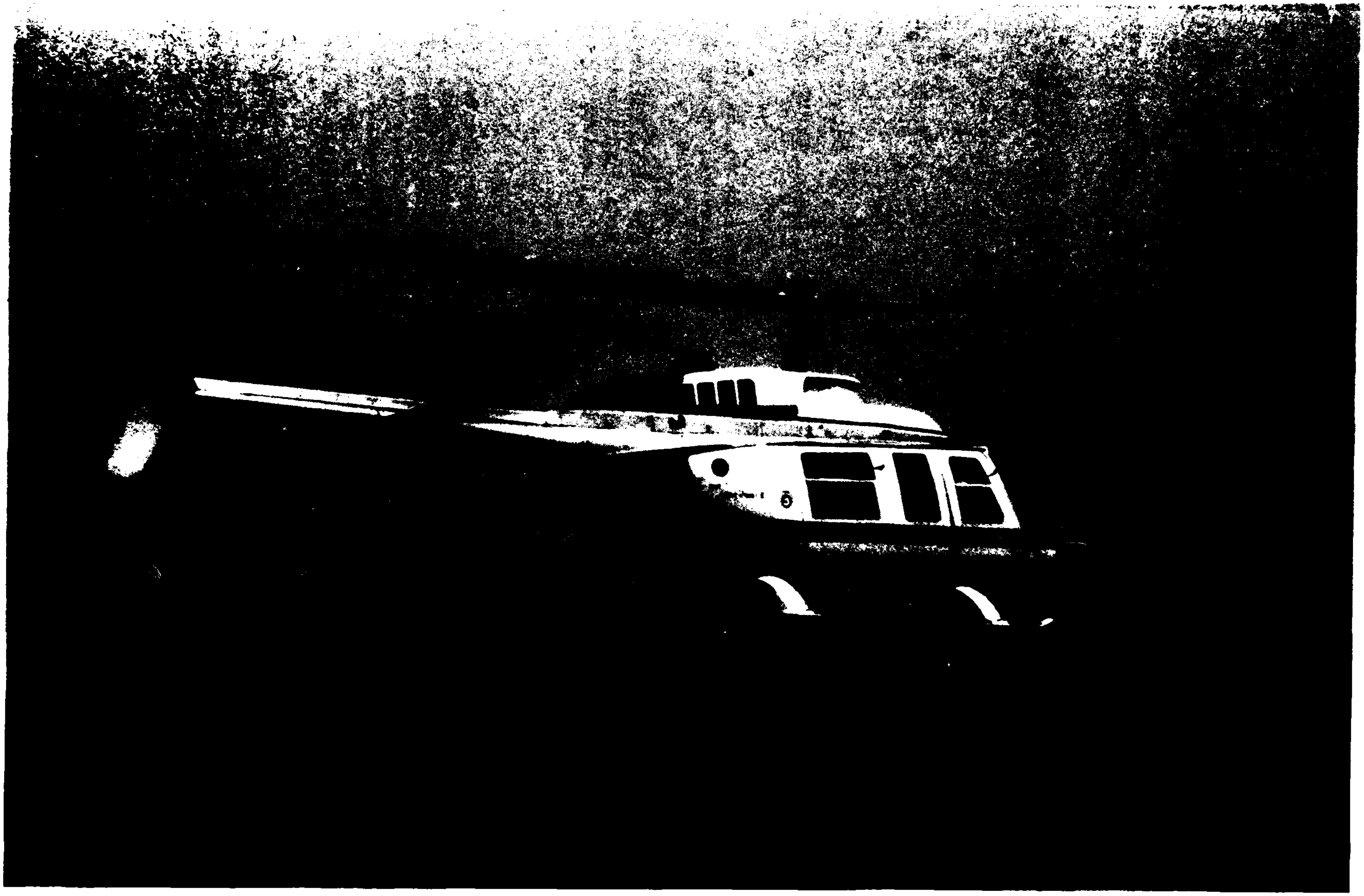
NEVER-EXCEED SPEED AT SEA LEVEL	130 KNOTS (241 KM/HR, 150 MPH)
MAX CRUISING SPEED AT 1,525 M. (5,000 FT.)	116 KNOTS (215 KM/HR, 134 MPH)
MAX RATE OF CLIMB AT SEA LEVEL	463 M (1,520 FT.)/MINUTE
.9 Vne IS ASSUMED TO BE	117 KNOTS
INSTALLED HP	500
TAKEOFF HP	435
TRANSMISSION HP	435
MAIN ROTOR RPM	394
TAIL ROTOR RPM	2550
MAIN ROTOR VELOCITY (fps)	763
TAIL ROTOR VELOCITY (fps)	722
BRC (FPM)	1520
BRC (FPS)	25.33
BRC SP V_y (knots)	574
V_y (FPS)	96.27
BRC CLIMB ANGLE (Degrees)	15.26
ICAO TAKEOFF ALTITUDE	156.46 METERS (513.32 FT.)
V_{NE}	130 KNOTS (150 MPH, 241 KM/HR)

LIMITATIONS

WEIGHT/CG LIMITATIONS: MAX GROSS FOR TAKEOFF AND LANDING	
INTERNAL	1837 KG (4050 LB.)
EXTERNAL	1927.8 KG (4250 LB.)
POWERPLANT LIMITATIONS: POWER TURBINE RPM (N2) LIMITS	
MINIMUM	97%
CONTINUOUS OPERATION	97 TO 100%
MAXIMUM CONTINUOUS	100%
GAS PRODUCER RPM (N1) LIMITS	
CONTINUOUS OPERATION	60 TO 104%
MAXIMUM CONTINUOUS	104%
MAXIMUM TRANSIENT	105%
ROTOR LIMITATIONS	
MINIMUM	97%
CONTINUOUS OPERATION	97 TO 100%
MAXIMUM CONTINUOUS	100%

Figure 1

Bell 206L-1 (Long Ranger II)



2.2 Reference Documentation

The test program was conducted in accordance with procedures set out in the following documents:

1) Test Plan for the ICAO Helicopter Noise Measurement Repeatability Program, November 1983, Revised December 15, 1983. (Ref. 1)

2) Helicopter Noise Measurement Repeatability Program Mid-Program Review Advance Phases Protocol, October 1, 1984. (Ref. 2)

While general test program provisions were specified in the above documents, the ultimate reference and focus of the program is the following document:

3) ICAO Annex 16 (Ref. 3)

Within the ICAO document helicopter noise certification is addressed in Chapter 8, with many cross references to Appendices 2 and 4.

Other valuable reference documents were:

4) Bell 206L-1 Long Ranger II Flight Manual, Bell Helicopter Textron, May 18 1978, (Ref. 4);

5) ICAO Working Group II Background Information Paper on Agenda Item 3A, Compendium of Comments on Test Plan, May 1984 (presented by the U.S. representative at the WG II meeting in Boston, MA). (Ref. 5)

6) "An Examination of Test to Test Variability for the A109A Helicopter Using ICAO Annex 16 Noise Certification Procedures", ICAO Committee on Aircraft Noise (CAN) Working Group B, joint German, Italian, U.S. member paper, January 1983. (Ref. 6)

2.3 Test Helicopter

Participants in the HNMRP had the option of testing either the Bell 206L-1 (Long Ranger II), or the Bell 206L-3 (Long Ranger III) helicopter. A Bell 206L-1 was used during the U.S./Canadian test program and is pictured in Figure 1. The 206L-1 and L-3 helicopters are considered acoustically identical although there are some differences in installed power and performance. The Bell 206L-1 and L-3 are turbine-powered, general purpose light helicopters. Table 1 is a listing of the specifications of the Bell 206L-1 used in the U.S./Canadian flight test.

The test helicopter was leased by Bell Helicopter Textron, from Omniflight Inc., located at Martin State Airport in Baltimore, Maryland. Prior to the test a laser retroreflector (shown in Figure 15) was mounted on the underside of the test vehicle. The retroreflector constitutes the only external difference between the US test vehicle and 206L-1 or L-3 helicopters utilized in other test programs.

2.0 Program Components and Support Systems

This section contains information concerning program participants, reference documentation, the test site, communication and support systems, and the test helicopter.

2.1 Test Participants

The noise measurement flight test program was directed by the Federal Aviation Administration, Office of Environment and Energy, Noise Abatement Division, Noise Technology Branch (AEE-120). It was conducted at Dulles International Airport, near Washington, D.C., on August 27, 28, and 29, 1984. Test program participants and their areas of contribution and involvement are identified below.

1. FAA AEE-120: Program management, test site surveying and preparation, field observation, direct read noise data measurement and analysis, recorded noise data analysis, cockpit videotape data acquisition and reduction instrument documentation, radar data acquisition, SODAR data analysis, photo-altitude slide reduction, and radar-laser-photo tracking data analysis.

2. Department of Transportation (DOT), Transportation Systems Center (TSC): Recorded noise data - measurement, reduction, correction, and analysis, and tracking data verification.

3. DOT Photographic Services Laboratory: Photo Overhead Positioning (POP) Systems operation, documentary photographs, and photo processing.

4. U.S. National Weather Service, Dulles International Airport Office: Fifteen minute meteorological observations, 10 meter tower operation and SODAR operation.

5. FAA Technical Center (ACT-310): Laser tracking system operation and data reduction, Visual Approach Slope Indicator (VASI) deployment and operation and verbal flight path guidance.

6. Dulles International Airport Air Traffic Control Tower: Air traffic control.

7. Omniflight Airways: Provided the Bell 206L-1 test helicopter (via Bell Helicopter lease) and primary pilot #1.

8. Bell Helicopter, Textron: Leased the test helicopter and assisted in flight test coordination.

9. Canadian Ministry of Transport: Fielded a measurement team equipped with acoustical recording equipment. (The Canadian test team is working on a separate report.)

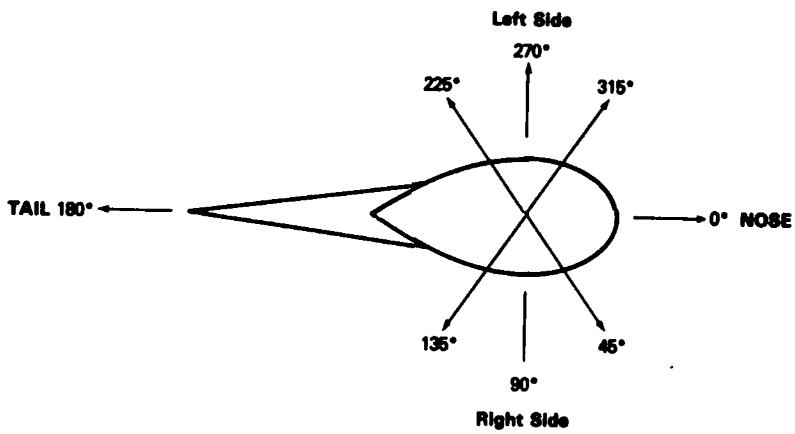
3.2.4 Static Flight Idle Series D

The static operations, while not part of the certification standard, were performed as part of the HNMRP core program to examine the consistency of measurements between the program participants. Static flight idle procedures, as followed in Series D, are as follows:

The helicopter is positioned at a designated point on a runway or taxiway of normal construction. The measurement teams record a one minute (or longer) sample of the sound for each of eight directivity angles. The helicopter skids are on the ground and the rotor RPM is stabilized throughout the recording period at 100 percent RPM. The acoustical emission angle convention is given as zero degrees at the nose, 90 degrees off of the right side, 180 degrees at the tail, 270 degrees off of the left side of the helicopter. Refer to Figure 11 for a diagram of the acoustical emission angles.

FIGURE 11

Acoustical Emission Angle Convention



3.2.5 Static Ground Idle Test Series E Procedures:

Static ground idle test target procedures, as followed in Series E, are the same as for the static flight idle with the exception that target RPM is 67 percent.

3.3 Optional Operations

3.3.1 Static Hover-In-Ground-Effect

Static hover-in-ground-effect (HIGE) test series F target procedures are the same as for the flight idle static operations with the exception that the skid height is specified as five feet above ground level.

3.3.2 Level Flyover Operations

Flyover test series G was conducted at 300 meters following the procedures otherwise detailed for flyover test series A.

Flyover test series H, I, and J were conducted at airspeed of 1.0 Vh (130 knots), 0.8Vh (104 knots), and 0.7 Vh (91 knots) respectively following procedures otherwise detailed for flyover test series A.

3.3.3 Bell Recommended Approach

This operation was conducted by both pilot 1 and pilot 2 and labeled as series M and MM respectively. The procedure followed was developed by Bell Helicopter engineers and test pilots and is detailed below.

1. Commence approach from a level flight altitude of 750 feet AGL at a point to enable the central microphone to be overflown at 400 feet AGL and follow a descent profile as if to land at the reference 6 degree target point, but terminate the descent at 100 feet AGL.

2. Start descent at 80 to 100 knots and reduce collective pitch to 10 to 20% main rotor torque.

3. Bleed off airspeed during the descent down to 200 to 300 ft. altitude.

Note: The reduction in collective pitch to the 10 to 20% torque range will result in higher than normal rate of descent. To offset this higher rate of descent, if desired the approach may be started at 10 to 20 % torque. This procedure should be practiced so that the pilot familiarizes himself with the variation in collective and cyclic controls necessary to tune out the main rotor's impulsive sound.

3.3.4 6 Degree Approach - No Guidance

This operation was conducted to evaluate the potential problem of "over controlling" in following visual and verbal flight path guidance inputs. The operation was conducted by both pilot 1 and pilot 2 and labeled as series K and KK respectively. The target operational proceedures were as follows:

1. Maintain a stabilized rate of descent of 600 feet per minute.

2. Stabilize airspeed at Vy (57 knots).

3. Stabilize rotor speed at maximum (top of green arc) normal operating RPM (394 RPM).

4. Commence the descent at 750 feet AGL at a point to enable the central microphone to be overflown at 400 feet AGL and continue down to 100 feet AGL.

3.3.5 Core Repeated

The core test program (detailed in Section 3.2) was conducted twice by two different pilots, thus establishing a data base of four complete core tests within this single flight test program. (This test feature will be evaluated at length in later sections of this document.)

When each of the core series was conducted by the second pilot (pilot 2) for the first time, the series was identified by doubling the letter prefix given to the original operation (i.e., AA, BB, CC).

When each of the core series was conducted by the first pilot (pilot 1) for the second time, the series was identified by adding a "Z" to the letter prefix given to the original operation (i.e., AZ, BZ, CZ, DZ, EZ).

When each of the core series was conducted by the second pilot for the second time, the series was identified by adding a "Y" to the letter prefix given to the original operation (i.e., AY, BY, CY).

4.0 Data Acquisition Systems

The following section describes the data acquisition systems employed by the US (FAA) during the HNMRP flight test.

4.1 Noise Measurement Systems

4.1.1 Direct Read Systems

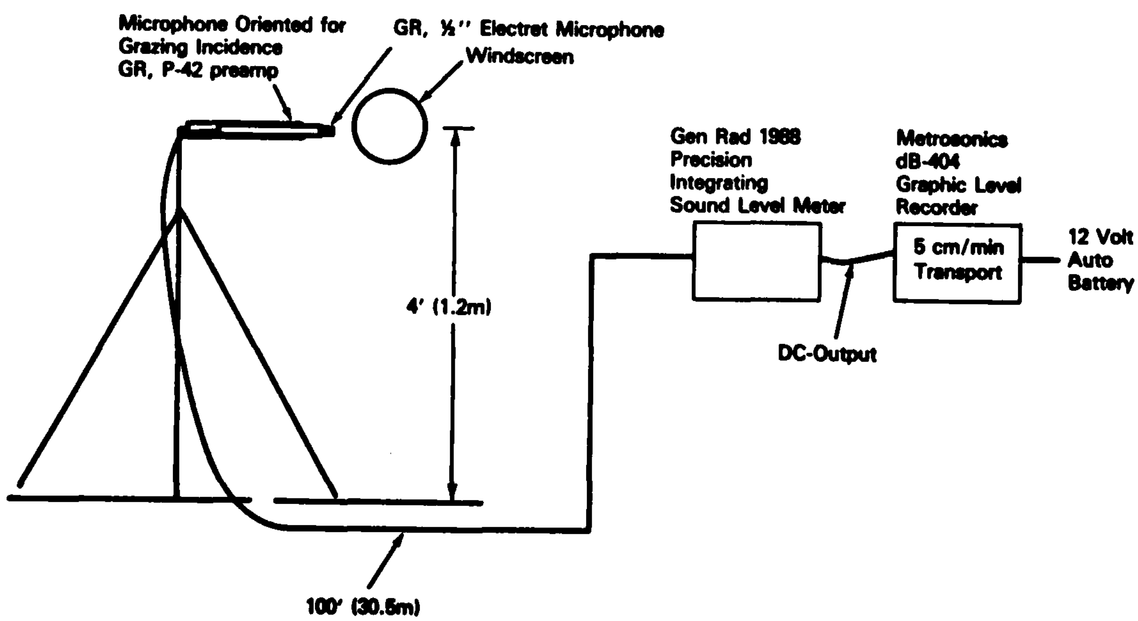
Type-1 direct read noise measurement systems were deployed during the U.S./Canadian HNMRP flight test. Flight operation sites 1, 2, and 3 had Gen Rad 1988 Precision Integrating Sound Level Meter (PISLM) systems while sites 4 and 5 had Gen Rad 2233 PISLM systems. Each system consisted of a Gen Rad P-42 preamp and a Gen Rad 1/2 inch electret microphone (oriented for grazing incidence) mounted on a tripod with the microphone four feet (1.2 meters) from the ground. Each microphone was covered with a 3 inch wind screen, and was connected by a 100 foot cable to the direct read PISLM systems.

With each system the slow response A-weighted sound level was output to a graphic level recorder (GLR).

Instruments were calibrated at the beginning and end of each test day and approximately every hour in between. These systems collected single event data consisting of maximum A-weighted Sound Level (AL), Sound Exposure Level (SEL), integration time (T), and Equivalent Sound Level (LEQ) (these data are presented in Appendix A). Figure 12 is a schematic drawing of the direct read PISLM system.

FIGURE 12

Acoustical Measurement Instrumentation



Direct Read Noise Measurement System

4.1.2 Magnetic Recording Systems

Nagra two-channel direct-mode tape recorders were deployed at each site during the U.S./Canadian HNMRP flight test to record noise data. On one channel the noise data were recorded with essentially flat frequency response, while on the second channel the data were first weighted and amplified using a high pass pre-emphasis filter.

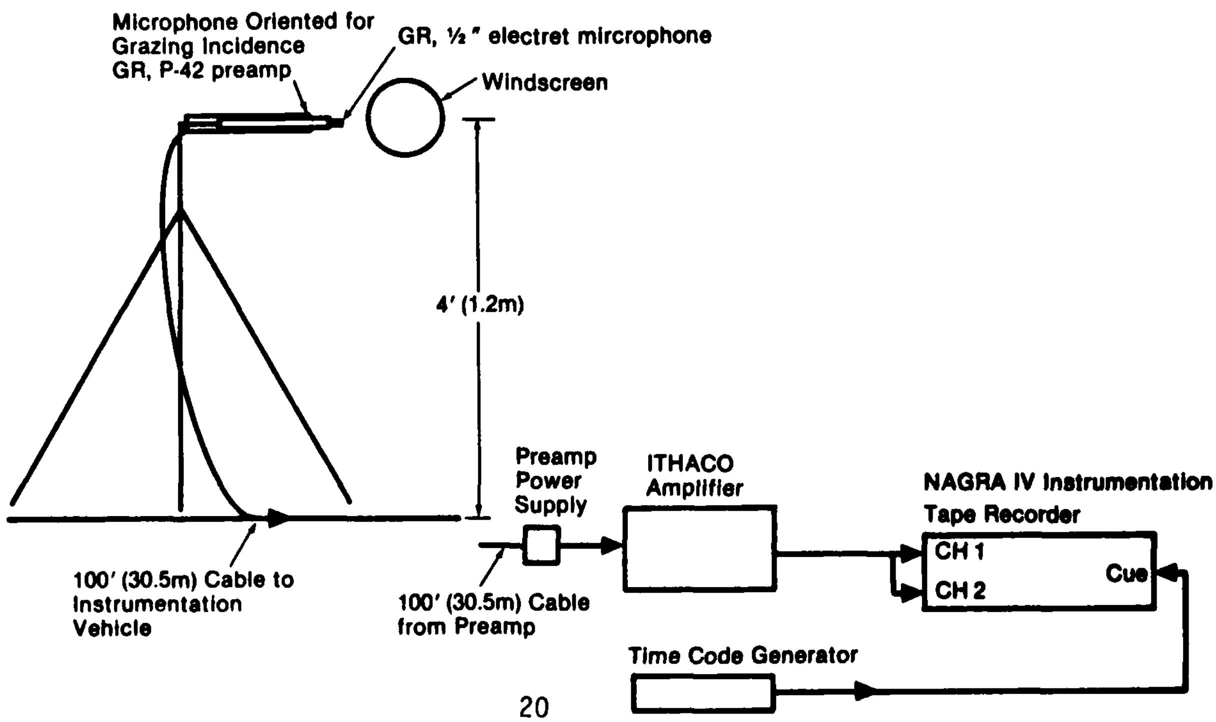
Helicopter acoustical signals are characterized by large level differences (30 to 60 dB) between the high and low frequencies and as such the use of pre-emphasis was necessary in order to boost the high frequency portion of the acoustical signal. The pre-emphasis network rolled off those frequencies below 10,000 Hz at 20 dB per decade. Recording gains were adjusted so that the best possible signal-to-noise ratio would be achieved while allowing enough "head room" to comply with applicable distortion avoidance requirements.

Inter Range Instrumentation Group-B (IRIG-B) time code was synchronized with the tracking time base and was recorded on the cue channel of each system.

The typical measurement system consisted of a Gen Rad P-42 preamp and a Gen Rad 1/2 inch electret microphone (oriented for grazing incidence) mounted on a tripod with the microphone four feet (1.2 meters) from the ground. Each microphone was covered with a 3 inch windscreen, and a 100 foot (30.5 meter) cable connected the preamp and the magnetic recording system. Figure 13 is a schematic of the microphone and magnetic recording system.

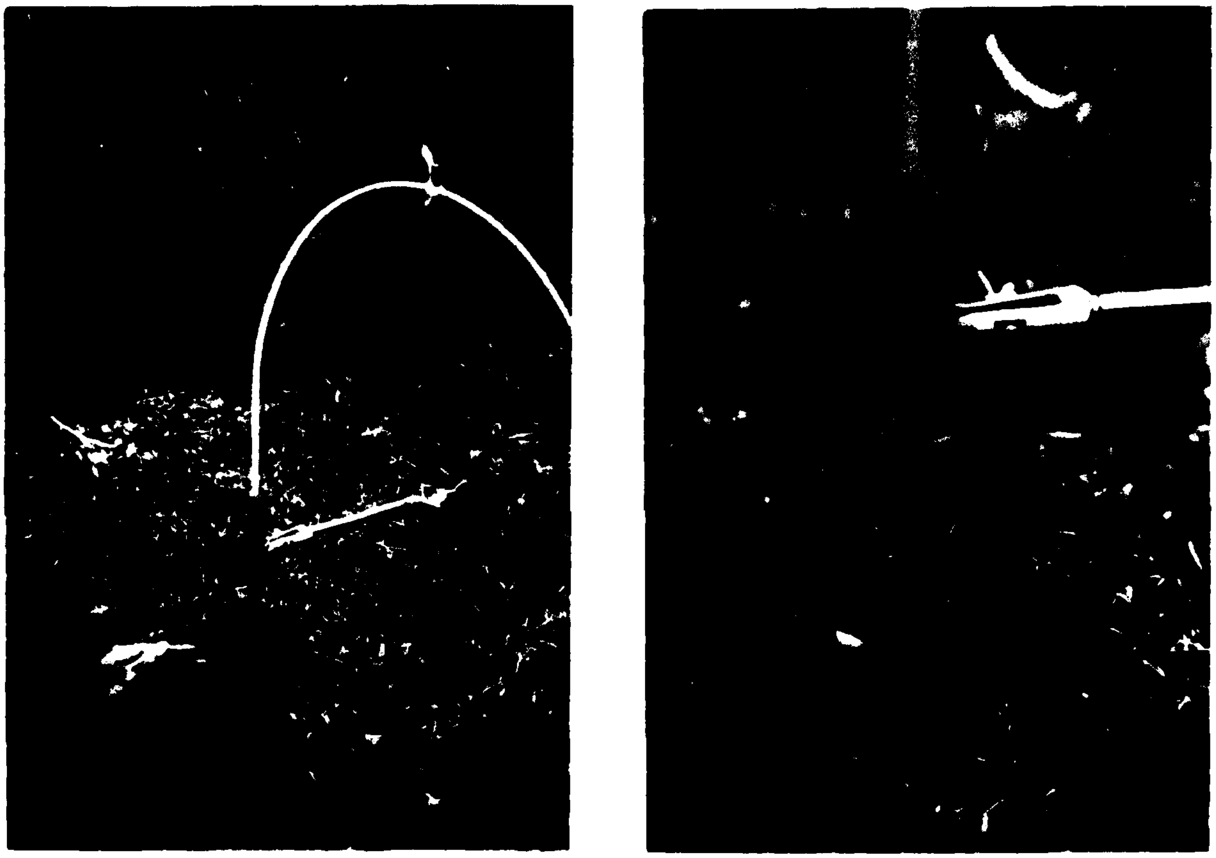
FIGURE 13

NAGRA Tape Recorder
Acoustical Measurement Instrumentation



The ground microphone system (shown in Figure 14) consisted of an inverted free field 1/2 inch electret microphone connected to a P-42 preamp. A 100 foot (30.5 meter) cable was used between the preamp and the magnetic recording system. The microphone diaphragm was parallel to and approximately 7 millimeters above a ground surface of closely cropped grass.

FIGURE 14



4.2 Tracking Systems

During the U.S./Canadian HNMRP flight test three separate tracking systems were used in order compare the systems and to assure complete acquisition of tracking data. Below is a description of each tracking system.

4.2.1 Laser

The laser precision automated tracking system used during the U.S./Canadian HNMRP flight test is a semi-mobile facility which uses an invisible laser beam to automatically track aircraft equipped with a retro-reflector. This laser system consists of tracking equipment, which

maintains an automatic track on the target, and data processing equipment, which processes, displays, and records the tracking data. The interior of the laser van and a selection of the laser instruments are depicted in Figure 15.

The tracking portion consists of a laser transmitter and an optical receiver which are mounted on an elevation-over-azimuth tracking mount on the top of the tracking van. Short bursts of infrared laser energy are generated in a narrow beam toward the target and are returned to a receiving telescope. The receiving telescope's optical output is then directed to a 4-quadrant photo detector. When the telescope axis is pointed precisely at the tracked target, all quadrants of the photo detector receive an equal portion of the target return image, and the detector outputs are equal. An optical automatic gain control (AGC) system operates a filter wheel in conjuction with the laser transmitter optical attenuators to maitain constant average optical signal levels at the quadrant photo detector. When the target is slightly off of the telescope axis, the detector outputs are unequal and are a function of the magnitude and direction of the pointing error. Automatically the necessary adjustments are made to maintain target tracking.

When first locking the laser transmitter onto the aircraft's retro-reflector, video-optical sighting equipment is used. Specifically a television camera is mounted below the receiving telescope and aligned with the tracking optical axis. After the camera sights the aircraft, the system begins tracking automatically.

Range is obtained by measuring the time interval between transmitted and received optical pulses. The range computer is initialized each time the laser is fired. If no target return pulse is received and automatic and manual operations fail to acquire the target the computer disregards the data sample. Range to the tracked target is measured and displayed with a resolution of 1 foot in 5 miles.

The data processing system consists of a Digital Equipment Corporation PDP-11/35 processor and related equipment. The accuracy for both azimuth and elevation is 20 arc seconds. During tracking, the data processing system exercises control over the tracking system and formats the tracking data for recording and display. After tracking is completed, tracking data are recorded on magnetic tape.

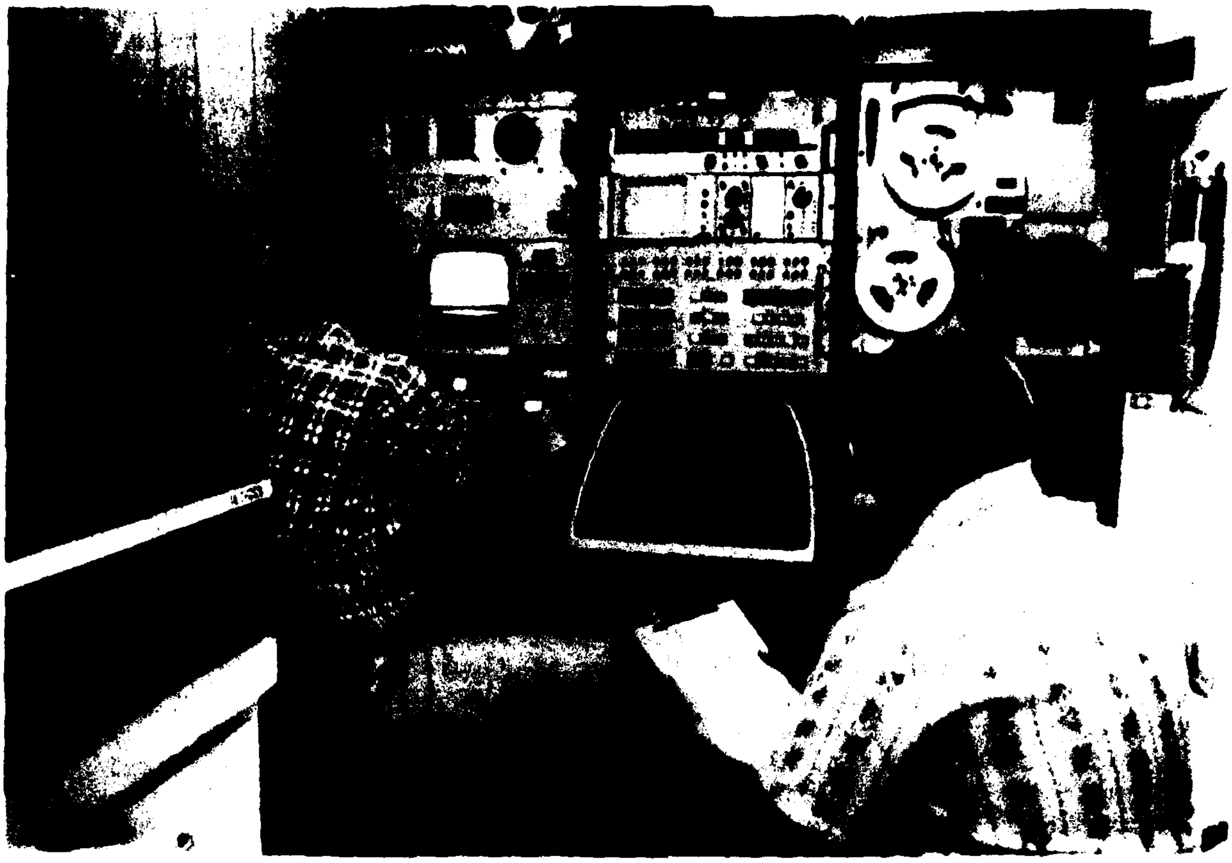
4.2.2 Photo Altitude Determination System

The helicopter altitude over a given microphone was determined by the photographic technique described in the Society of Automotive Engineers report AIR-902 (Ref. 7). This technique involves photographing an aircraft during a flyover event and proportionally scaling the resulting image with the known dimensions of the aircraft. The camera is initially calibrated by photographing a test object of known size, from a known distance. Measuring the resulting image enables calculation of the effective focal length from the proportional relationship:

(Image Length/Object Length) = (Effective Focal Length/Object Distance)

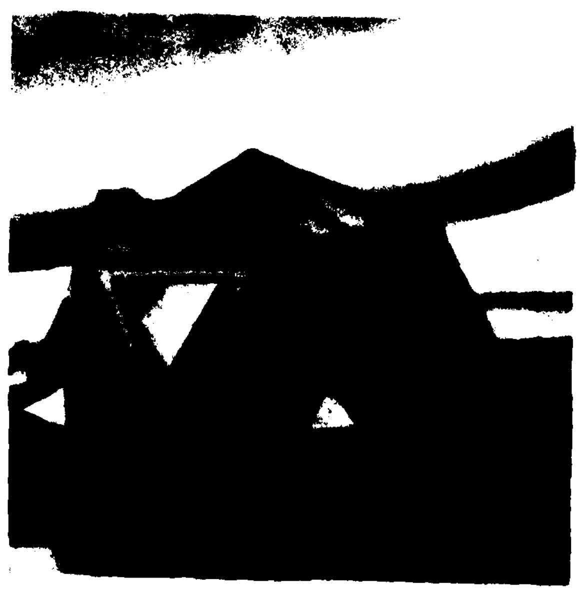
This relationship is used to calculate the slant distance from the microphone to the aircraft. Effective focal length is determined during camera calibration. Object length is determined from the physical

FIGURE 15



Laser crew operating equipment

Laser transmitter



Retroreflector attached to underside of helicopter

dimensions of the aircraft (typically skid width) and the image size is measured on the photograph. These measurements lead to the calculation of object distance or slant distance from camera or microphone to the aircraft. The concept applies similarly to measuring an image on a print, or measuring a projected image from a slide.

Four 35 mm single lens reflex cameras (using slide film) were deployed along the flight track centerline, as depicted in Figure 5. Lenses with different focal lengths, each individually calibrated were used in photographing helicopters at different altitudes in order to more fully fill the frame and reduce image measurement error.

The photoscaling technique assumes the aircraft is photographed directly overhead. Although SAE AIR-902 does present equations to account for deviations caused by photographing too soon or too late, or by the aircraft deviating from the centerline, these corrections are not required when deviations are small. Typically the deviations were acoustically insignificant.

The photographer was aided in estimating when the helicopter was directly overhead by means of a photo-overhead-positioning system (POP) as illustrated in the diagram and pictures of Figure 16. The POP system consisted of two wires, parallel to the ground, and in a vertical plane orthogonal to the flight path. The photographer, lying beneath the POP system, initially positioned the camera to coincide with the vertical plane of the two guide wires. The photographer then tracked the approaching helicopter in the viewfinder and tripped the shutter when the helicopter crossed the superimposed wires. This process of tracking the helicopter also minimized image blurring and the consequent elongation of the image.

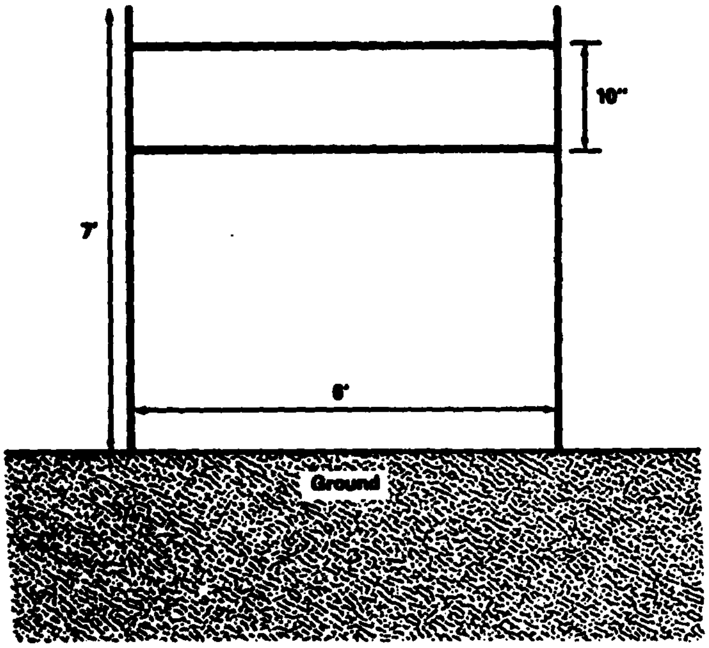
A scale graduated in 1/32-inch increments was used to measure the projected image. This scaling resolution translated to an error in altitude of less than one percent. A potential error lies in the scaler's interpretation of the edge of the image. In an effort to quantify this error, a test group of ten individuals (in connection with a 1983 test program) measured a selection of the fuzziest photographs from the test. The resulting stratistical analysis revealed that 2/3 of the participants were within two percent of the mean altitude.

4.2.3 Radar

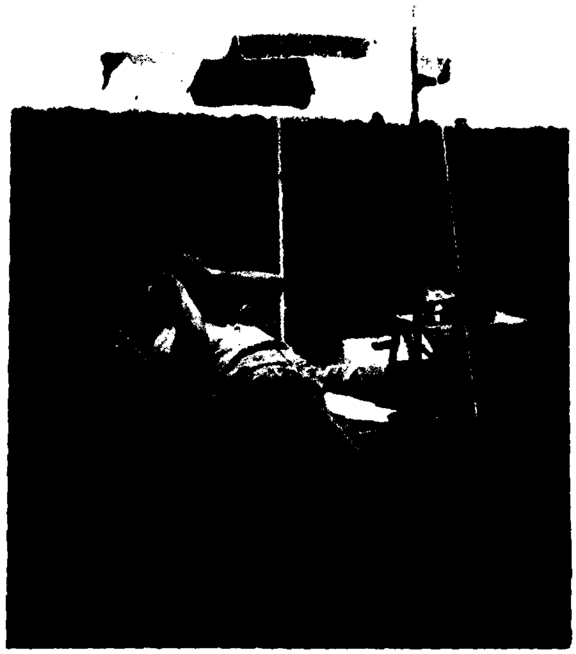
The FAA semi-mobile radar system, shown in Figure 17, is a 9.1 GigaHertz, primary radar system. The system locates the target with the assistance of a videocamera mounted below the radar transmitting/receiving antenna. Once the operater controlled video system has the target in an acquisition window, the radar system locks on. The radar determines the range of the helicopter by analyzing the reflected electromagnetic pulse from the aircraft. The target's spherical coordinates, range, elevation and azimuth are output, along with IRIG-B time code, to a Kennedy one inch magnetic tape drive. The magnetic tape is subsequently reduced in the FAA acoustical laboratory using a PDP-11-35 computer system. Raw data are converted to Cartesian coordinates, and the required position information is computed, tabulated and plotted.

FIGURE 16

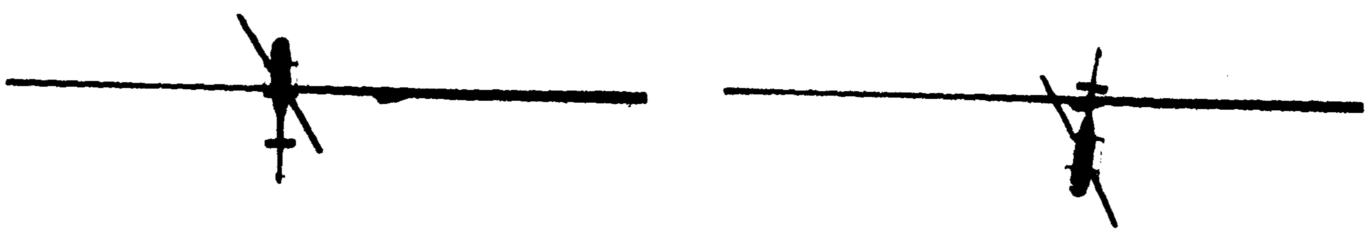
Photo Overhead Positioning System
(Pop System)



Artist's drawing of the
photo overhead positioning system

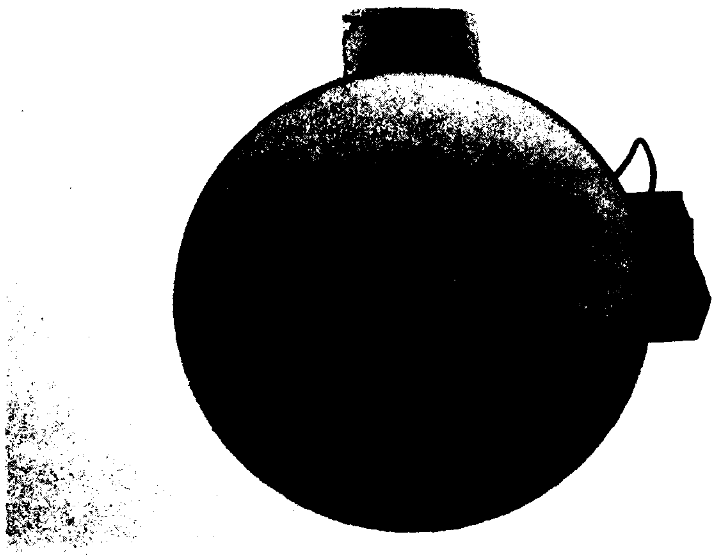


Photographer using the POP system
to photograph the helicopter



Photographs of the Bell 206L-1, as taken by the photographer using the POP system

FIGURE 17



Radar Transmitting/Receiving Antenna

4.3 Meteorological Systems

The influences of wind speed, direction and gradient have been matters of considerable concern in the context of helicopter noise certification testing. The inflow of turbulent air, the redirection of shed vortices, and the change in helicopter attitude with crosswinds are all effects which are believed to be highly related to the variability in measured noise levels. As such, the HNMRP requested that the program participants constrain their testing to periods of low winds well within the limits of Annex 16, Appendix 4, Section 2.2.2 e) (as amended at CAN 7) and that detailed wind and meteorolgical information be gathered so that the influence of winds aloft on measured sound levels might be analyzed. Wind information gathered will also be used to evaluate data for noise events which appear significantly different.

For the U.S./Canadian HNMRP flight test a relatively new system (of French design) was used to acquire a nearly continuous detailed description of the wind structure in the immediate vicinity of the noise measurement sites.

(This is a departure from previous U.S. testing in which radiosondes were used to measured wind speed and direction. While the radiosondes did an adequate job of identifying gross meteorological effects, they were typically launched about a kilometer from the measurement site and, because of cost, were launched only every 30 minutes.

A meteorological tower ten meters high was also used during the test to measure temperature and relative humidity, as well as wind speed and direction.

Appendix G summarizes selected information from the two measurement systems and presents a resolution of the wind vector data into on-track and cross-wind components.

4.3.1 SODAR

The SODAR, depicted in Figure 18, measures wind speed and direction by sending an acoustical pulse into the atmosphere and measuring the intensity of the returning pulse echo. Changes in wind speed and direction will cause measurable intensity and frequency (Doppler) shifts to the pulse echo.

By using a three antenna system, the SODAR can measure and display three dimensional wind speed and thermal structures, thus giving a visible wind picture for multiple altitudes.

The accuracy of the Remtech Doppler SODAR system is + 0.3 meters per second for wind speed and + 3 degrees for wind direction. (This accuracy far exceeds the capabilities of weather sounding balloons and satellite techniques.)

The SODAR system uses a DEC PDP-1103 computer to process the information received from the pulse echoes and stores the output on magnetic tape. Subsequent to the test this tape was processed and a hard copy of the information was generated. Table 3 is a sample of a 15 minute summary of SODAR output, with notes to assist in interpreting the printout. Appendix H provides a complete listing of the 15 minute data summaries collected during the test.

4.3.2 Ten-Meter Tower

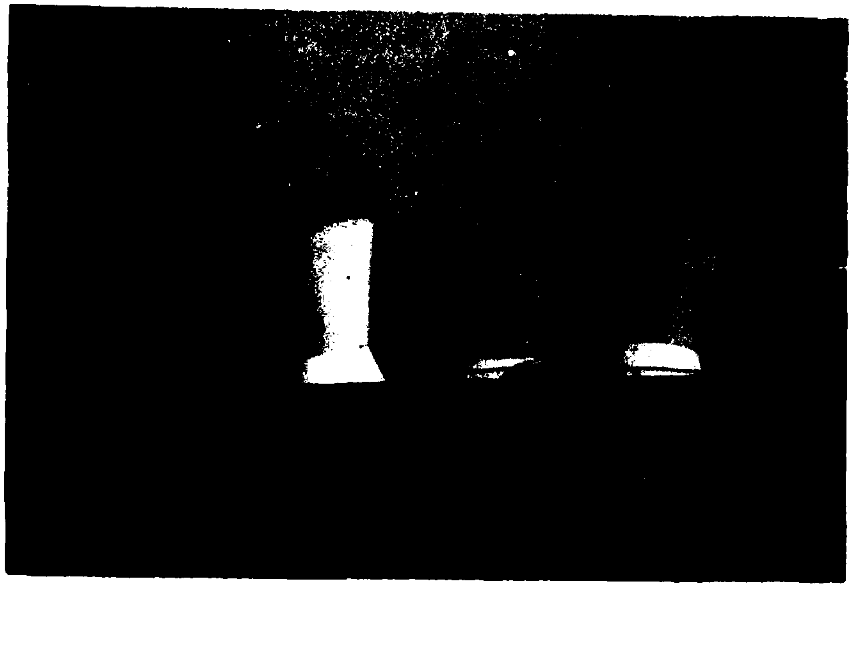
A meteorological tower, which stood ten meters above ground level (shown set up near the SODAR in Figure 19 and in close detail in Figure 20), was used to measure temperature, wind speed, wind direction, and relative humidity. The tower utilized the following transducers:

Table 3

A Sample of the SODAR Summary 15-Minute Output

$DM	8	27	84	17	14	53	364	442		453	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	18	-9999						0	0	0
V	280	17	25	378	156	-9999	-33	41	62	94	15
V	260	17	11	223	180	16	-49	49	46	59	41
V	240	19	39	-9999	-9999	-9999	-44	40	42	51	49
V	220	16	18	214	156	32	-44	39	42	98	40
V	200	24	108	342	148	21	-49	47	39	42	39
V	180	17	34	310	158	22	-47	43	45	49	47
V	160	19	38	293	171	30	-34	42	45	50	43
V	140	20	55	248	162	29	-40	50	39	45	42
V	120	20	35	334	159	28	-34	45	43	50	50
V	100	25	80	297	157	27	-32	45	47	40	45
V	80	35	35	273	178	27	-19	54	43	46	45
V	60	45	3	271	162	30	-30	55	45	40	54
V	40	69	30	236	173	-9999	-18	51	44	37	55
V	0	0	0	91	89	79	62	0	39	32	51
$											

FIGURE 18



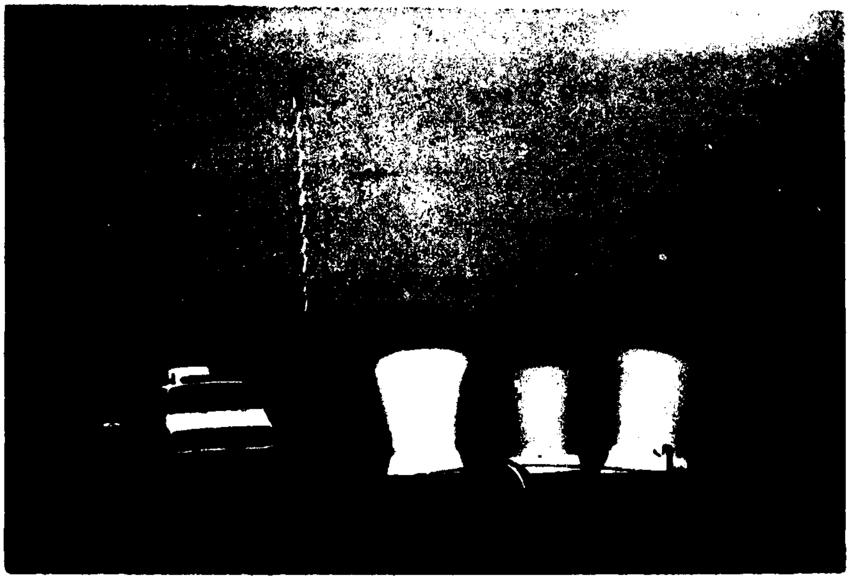
The three antennas of the SODAR system

Measurement crew operating SODAR equipment

1) a thermolinear probe, to measure the temperature: accuracy = +/- .15 degrees
2) a three-cup anemometer, to measure wind speed: accuracy = +/- .25 mph
3) a wind vane attached to a potentiometer, to measure wind direction: accuracy = +/- 3 degrees
4) a relative humidity sensor: accuracy = +/- 4%

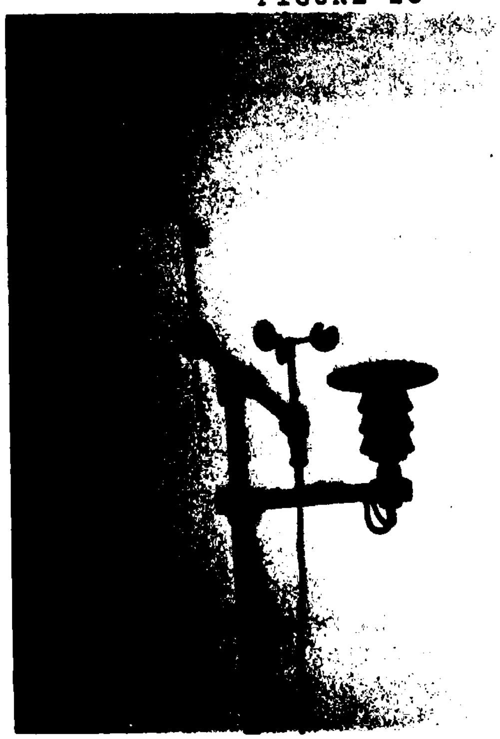
The weather station signals were then transmitted to a van in which data were recorded on magnetic medium and printed out as hard copy strip chart graphs. Appendix I is a listing of the data received from the ten meter tower during the test.

FIGURE 19



10-meter meteorological tower

FIGURE 20



Close-Up of Meteorological Equipment

8.4 Guided Versus Unguided Approach Analysis

Helicopter noise certification testing procedures are further evaluated in this section. The topic was raised during the 3-nation comparison of the A-109 (Ref.8), sponsored in 1981 by the ICAO Committee on Aircraft Noise (CAN), Working Group B, whether or not the degree of guidance provided during an approach operation might influence resulting sound levels. It was suggested that too much guidance might result in over-controlling, in turn resulting in transient loads on the rotor system, which would then create variation in sound levels. In order to explore this concern, the test program was designed to incorporate approaches in which pilots were provided with both verbal and visual flight path guidance (C-prefix test series), and other approaches in which the pilot received an approach initiation point (altitude at a given position) and was asked to maintain a constant rate of descent and airspeed until reaching an altitude of 100 feet above the ground (K series). Examination of the C and K prefix test series in Table 6 shows that the guided and unguided approach operations result in very similar EPNL values. The C-prefix series are very tightly grouped and the unguided series K fits in very well. The unguided series KK does deviate approximately 0.6 dB from the others. This deviation was not found to be statistically significant.

8.3 Test Day to Test Day Analysis

Another issue related to certification testing is the day to day repeatability and variance. Table 7 provides the necessary information to assess differences which may occur when the same pilot repeats a given flight operation at a different time. The dates and times listed below indicate when various test series were conducted, as well as whether or not the day to day differences were significant for a given pilot.

It is seen that in general, the differences from one test day to the next are very small. The B-BY and AA-AY differences appear to be statistically significant, and will be investigated in further depth during the HNMRP evaluation process.

Table 7
Day to Day Variation in Flight Test Noise Levels

SERIES	DATE	TIME	EPNL	SIGNIF. DIF. ?
LEVEL FLYOVER				
PILOT 1				
A	8-27	8:45 A.M.	87.24	NO
AZ	8-28	11:30 A.M.	87.24	
PILOT 2				
AA	8-28	8:30 A.M.	86.97	
AY	8-29	12:30 A.M.	87.59	YES
TAKEOFF				
PILOT 1				
B	8-27	11:30 A.M.	86.62	NO
BZ	8-28	11:55 A.M.	86.57	
PILOT 2				
BB	8-28	11:00 A.M.	87.18	YES
BY	8-29	8:30 A.M.	88.64	
APPROACH				
PILOT 1				
C	8-27	12:00 P.M.	90.17	NO
CZ	8-28	11:50 A.M.	90.04	
PILOT 2				
CC	8-28	10:00 A.M.	90.07	NO
CY	8-29	8:30 A.M.	90.45	

8.2 Pilot to Pilot Analysis

This section focuses on one of the issues associated with helicopter noise certification testing procedures. It has been speculated that variation in measured helicopter noise may be associated with pilot technique. In order to examine pilot to pilot differences the test program was designed to include identical flight operations, flown by two different pilots. During the course of the test program the opportunity became available to repeat the core certification operations four times, two different pilots flying on two different days.

As seen in Table 6, pilot to pilot differences are extremely small and in general not statistically significant.

Statistical analyses for significance were performed for each core flight operation and confirm that pilot to pilot differences are not statistically significant for the level flyover operation, with the exception of series AY. While the AY EPNL value is only 0.6 dB removed from the others, the small variance within samples leads to the significance in the difference. Series AY operational data will be further examined in the HNMRP evaluation process

In the case of the ICAO approach operation (with VASI and verbal guidance), differences are once again statistically insignificant.

In the case of the ICAO takeoff operation, pilot to pilot differences are insignificant with the exception of test series BY (pilot 2 flying the operation for the second time). The EPNL values for series BY are significantly different from series B and BZ (pilot 1), as well as series BB (pilot 2 flying the operation for the first time). With the exception of series BY, all the takeoff operations are statistically similar. Test series BY noise data and attendant operational and flight test information will be closely scrutinized in subsequent analyses associated with the HNMRP evaluation process.

8.1 EPNL Certification Level Analysis

This section contains the EPNL certification data representing the basis for inter-program comparisons within the US/Canadian program as well as intra-program comparisons with other nations participating in the ICAO HNMRP. A summary of the fully corrected EPNL values for the three certification measurement locations is presented in this section. In the tables of Appendix L, the three microphone average is computed for each event and is shown in the right column. The average for each microphone along with standard deviation and 90% confidence interval is also shown in the tables. The final, fully corrected, three microphone average for the series, certification EPNL value is shown in the lower right corner of each table along with the required statistics.

The table presented immediately below provides a summary of EPNL values for the various certification test series:

Table 6

SERIES	IDENTIFICATION	EPNL (dB)
A	ICAO LFO (P1)	87.24
AZ	ICAO LFO (P1)	87.24
AA	ICAO LFO (P2)	86.97
AY	ICAO LFO (P2)	87.59
B	ICAO T/O (P1)	86.62
BZ	ICAO T/O (P1)	86.57
BB	ICAO T/O (P2)	87.18
BY	ICAO T/O (P2)	88.64
C	ICAO APP (P1)	90.17
CZ	ICAO APP (P1)	90.04
CC	ICAO APP (P2)	90.07
CY	ICAO APP (P2)	90.45
K	UNG 6 APP (P1)	90.39
KK	UNG 6 APP (P2)	89.41

Table 6 will provide the starting point for the next several sections which examine pilot to pilot differences, day to day differences, and guided versus unguided approach differences.

8.0 Noise Data Analyses

This section contains analyses and discussions of the data acquired at the U.S./Canadian HNMRP flight test. For each analysis, the analytical process is described, graphs and/or tables are presented, and appendices are referenced.

Analyses contained in this section have been designed to achieve one or more of the following three objectives:

1.) provide internal comparisons within the U.S. test program;

2.) provide information useful in comparing U.S. test data with results of other participants in the ICAO Helicopter Noise Measurement Repeatability Program;

3.) provide an evaluation of technical requirements specified in existing ICAO helicopter noise certification standards.

The following is a list of the analyses which are contained in this section.

8.1 EPNL Certification Level Analysis

8.2 Pilot to Pilot Analysis

8.3 Test Day to Test Day Analysis

8.4 Guided Versus Unguided Approach Analysis

8.5 Left - Right Directivity Analysis

8.6 Source Noise Adjustment (Delta 3) Advancing Blade Tip Mach Number Analysis

8.7 Ground versus 1.2 Meter Microphone Analysis

8.8 Air to Ground Acoustical Propagation Analysis

8.9 Static Data Analysis

8.10 A-Weighted Time History Analysis

8.11 Dominant Spectral Component Analysis

8.12 Trajectory Plots and Ground Track Analysis

8.13 Data Reduction System Calibration Test Tape Results

8.14 Divergence of Noise Levels Within Individual Test Series

The scaled photo-altitudes for each event (from all four sites) were entered as a single data set. The template then operated on these data, calculating the straight line slope in degrees between the helicopter position over each pair of sites. In addition, a linear regression analysis was performed in order to create a straight line approximation to the actual flight path. This regression line was then used to compute estimated altitudes referenced to each centerline microphone location. (Exact distances between photo altitude determination sites and the noise measurement sites are detailed in Figure 5.) Closest Point of Approach (CPA) was also computed to the two sideline sites.

While the photo-altitude data do provide a reasonable description of the helicopter trajectory, care is necessary when using the regression slope and the regression estimated altitudes. One must be sure that the site-to-site slopes are similar (approximate constant angle) and that they are in agreement with the regression slope. If these slopes were not in agreement, then photo altitude data along with the site-to-site slopes were used in calculating altitude over microphone locations.

7.4 Radar Data Reduction

Radar data collected on magnetic tape were transferred to disks and analyzed using a Digital PDP 1135 computer system. The data were converted to Cartesian coordinates X, Y, Z, and T (time). This data base, along with the time at PNLTM, was used to derive the following parameters: Slant Range (SR), Closest Point of Approach (CPA), Acoustical radiation Angle (A-A), Rate of Climb (RC), Climb/Descent Angle (C/D-A), and Ground Speed (GS). The radiation angle was taken as the angle between the slant range, and the flight path extending ahead of the helicopter. A subsequent program produced ground track and trajectory profile plots (not included in this document).

7.5 Laser Data Reduction

Laser data were essentially processed in the same way as the radar data, once the spherical coordinates were translated into Cartesian coordinates. The laser data tapes were processed by FAA personnel at the FAA Technical Center, near Atlantic City, New Jersey. Plots of flight profiles and ground tracks were also generated using laser tracking data. Takeoff operation tracks are shown in Appendix E.

7.6 Photo Adjusted Radar Data

In cases where laser data were unavailable, photo data were used together with radar data, creating photo adjusted radar data (PAR). PAR data were generated in the following manner:

$$CPA_{PAR} = \text{photo CPA}$$

$$SR_{PAR} = \frac{\text{Photo CPA} * \text{Radar SR}}{\text{Radar CPA}}$$

7.0 Tracking Data Reduction

This section describes the reduction of photo-altitude, radar, and laser tracking data and the subsequent methodology used to integrate the three data sets into a complete position trajectory record for the U.S./Canadian HNMRP flight test. As discussed below, each of the tracking systems encountered problems, but fortunately the net yield of valid information resulted in a complete record, which is presented in Appendix F.

7.1 Tracking System Difficulties

Problems were encountered with each of the three tracking systems throughout the program. The laser system's problems included failure of the diesel electric generator power supply and difficulty locking onto the retroreflecter during some operations as a result of attitude and the placement of the retroreflecter on the underside of the helicopter.

The FAA semi-mobile radar system experienced data drop-out in situations when the tracking antenna would lock-up on strong stationary electromagnetic targets. Problems were also encountered with the recording tape drive transport mechanism.

The photographic crew universally experienced difficulty in their attempts to provide time synchronized photographs through use of time indexed data backs, or range code synchronized stop watches. Additional training and shake down exercises would have helped. Although difficulties surfaced with documentation of calibration photos, the 35 mm slides were of high quality and (after a recalibration exercise) yielded accurate altitude data.

7.2 Data Confidence Level

When laser tracking data were available, they were taken as the data source. The laser operation had numerous built-in diagnostic checks to assure a quality output. The accuracy of the laser system is on the order of 1 foot in 5 miles and consequently was taken as the most accurate tracking reference. Laser data were available for approximately one-third of the program events.

The photo-altitude data were taken as the second most accurate data set. Photographic data were compared to laser data and found to be generally within 10 feet in altitude.

Radar data were compared with laser data and were found to be in very good agreement in some cases, but in other cases 20 to 40 feet different. The disconcerting aspect of the radar data is that the differences from the laser were inconsistent in magnitude and direction.

7.3 Photo-Altitude Data Reduction

Data acquired from the four centerline photo-altitude sites were processed on an Apple IIe microcomputer using a VISICAL@ electronic spread sheet template developed by the authors for this specific application.

6.0 Meteorological Data Reduction

Selected data acquired by the 10 meter meteorological tower and the Sodar system have been combined in the tables of Appendix G. Each table provides a chronological record of the temperature (expressed in degrees Fahrenheit), relative humidity (percent), and wind information for a given test day. Each line entry in the tables indicates the time and altitude for the reading. The 10 meter data represent instantaneous readings manually scaled from a strip chart recorder. The wind data for altitudes other than 10 meters represent the average value computed by the Sodar for the previous 15 minute sampling period. (Wind information is available for one minute samples but is not presented because of the sheer volume of data.) The data will be consulted as necessary in the process of the HNMRP evaluation exercise.

Wind data have been divided into on-track and cross-track components to aid in the evaluation of compliance with ICAO crosswind limitation requirements. Throughout the test program crosswind components were nearly always below 5 knots.

The Sodar system also provided information on the vertical movement of the atmosphere at various altitudes. This information provides a useful figure of merit for the evaluation of turbulence. The reader can also examine the change in wind direction and speed from the surface through the flight level to further assess the stability of the air mass. A complete record of 15 minute SODAR reports is provided in Appendix H.

The temperature and relative humidity data presented in the tables were used in the Delta 1 atmospheric absorption correction process. A linear interpolation between fifteen minute reports was conducted to arrive at values for use in the adjustment. This same temperature data was used to compute the test Mach Number values for the Delta 3, source noise correction.

5.2.10 Delta 3 Correction: Source Noise

The source noise correction is applied only in the case of level flyover. This adjustment accounts for changes in sound level associated with deviations of the advancing blade Mach Number from the reference value. Deviations may be associated with rotor RPM, ambient temperature, or airspeed deviations from reference conditions. The topic of source noise adjustment is discussed in detail in analysis Section 8.6 of this report.

A separate PNLTM versus Mach Number function was developed for the centerline and each of the two sideline microphones. In each case a regression line was fitted to the data set and the slope was determined.

In the case of the Bell 206L-1, over the range of Mach Numbers tested, a linear regression provided the best fit curve. The following relationship was used to compute adjustment values.

Delta 3 = slope * (reference Mach # - test Mach #)

5.3 Summary of Reference Values Used in Data Adjustments

Table 5 provides a synopsis of reference values used in data adjustment calculations.

Reference CPA Distances:

Table 5

	CENTERLINE CENTER	CENTERLINE SITE 4	CENTERLINE SITE 5	SIDELINE SITE 2	SIDELINE SITE 3
150m LFO	492.12'	492.12'	492.12'	695.96'	695.96'
300m LFO	984.24'	984.24'	984.24'	1100.40'	1100.40'
Takeoff	495.04'	624.56'	365.51'	698.03'	698.03'
Approach	391.53'	442.97'	340.10'	628.87'	628.87'

Absorption Atmosphere:

77 degree 70% relative humidity

Delta 3 Source Noise Correction:

59 degree F, speed of sound value
394 RPM rotor speed
117 knots airspeed

5.2.6 Other Metrics

In addition to the EPNL/PNLT family of metrics and the SEL/AL family, the overall sound pressure level (OASPL) and 10-dB down duration times are presented as part of the "As Measured" data set in Appendix B. The A-Weighted Sound Level and the OASPL were computed using the acoustical spectrum from 24 to 40000 Hz, Bands 14 through 40.

5.2.7 Static Tests

In the case of static operations, thirty-two seconds of corrected raw spectral data (64 contiguous 1/2 second data record) were energy averaged to produce the data tabulated in Appendix D. The spectral data presented are "as measured" at the emission angles shown in Figure 11, established relative to each microphone location. Also included in the tables are the 360 degree (eight emission angles) averaged levels, calculated by both arithmetic and energy averaging.

Note that "masked" levels (see 5.2.1 #2) are replaced in the tables of Appendix D with a dash (-). The indexes shown, however, were calculated with a shaped spectra as per Section 5.2.2 of this report.

5.2.8 Delta 1 Correction: Spherical Spreading and Atmospheric Absorption

Spherical spreading and atmospheric absorption were implemented in accordance with the procedures outlined in Annex 16, Appendix 1, Section 9.4. The process of correcting data for spherical spreading and atmospheric absorption included:

1. Adjusting the measured 24 one-third octave SPLs of the PNLTM spectra to the standard acoustical day, 77F-70% RH, conditions utilizing on site 10 meter meteorological data.

2. Adjusting for the change in atmospheric absorption associated with the difference in slant range between the actual and reference position of the helicopter at the time of PNLTM.

5.2.9 Delta 2 Correction: Distance-Duration and Groundspeed-Duration

Procedures outlined in Annex 16, Appendix 4, Section 9.4.2 revised (as reported in CAN 7 Report on Agenda Item 3, pages 3 through 46) were used in implementing the duration adjustments.

Delta 2 = [-7.5 log (CPAtest/CPAref)] + [10 log (Vg test/Vg ref)]

where the CPA is the closest point of approach and the Vg is the ground speed.

2. At one-third octave frequencies above 630 Hz, if the measured level was within 3 dB or less of the ambient, the level was identified as "masked".

5.2.2 Spectral Shaping

The raw spectral data, corrected for ambient noise, were adjusted by sloping the spectrum shape at -3 dB per one-third octave for those bands (above 1.25 kHz) where the signal to noise ratio was was less than 3 dB, i.e., "masked" bands. This procedure was applied in cases involving no more than 9 "masked" one-third octave bands. The shaping of the spectrum over this 9-band range was conducted to minimize EPNL data loss. This spectral shaping methodology deviates from Annex 16 (and FAR-36) procedures in that the extrapolation includes four more bands than normally allowed.

5.2.3 Analysis System Time Constant/Slow Response

The corrected raw spectral data (contiguous linear 1/2 second records of data) were processed using a sliding window or weighted running logarithmic averaging procedure to achieve the "slow" dynamic response equivalent to the "slow response" characteristic of sound level meters as required under the provisions of the test program, Annex 16, and FAR 36. The following relationship using four consecutive data records was used:

$$Li = 10 \text{ Log } [\ 0.13 * (10^{0.1Li-3}) + 0.21 * (10^{0.1Li-2}) + 0.24 * (10^{0.1Li-1}) + 0.33 * (10^{0.1Li})\ ]$$

where Li is the one-third octave band sound pressure level for the ith one-half second record number. This procedure was described at length in U.S. Working Paper 6, from the April 1985 ICAO CAEP meeting in Tokyo, Japan (Ref. 7).

5.2.4 Bandsharing of Tones

All calculations of PNLTM included testing for the presence of band sharing and adjustment in accordance with the procedures defined in ICAO Annex 16, Appendix 2, Section 4.3.2 and FAR-36, Appendix B, Section 36.2.3.3.

5.2.5 Tone Corrections

Tone Corrections were computed using the helicopter acoustical spectrum for the frequency range 24 Hz to 11,200 Hz (bands 14 through 40). These data were used to compute tone correction for bands 17 through 40, the same set of bands used in computing the EPNL and PNLT. The initiation of the tone correction procedure at a lower frequency reflects recognition of the strong low frequency tonal content of helicoter noise. This procedure is in accordance with the requirements of ICAO Annex 16, Appendix 4, paragraph 4.3. Lower range tone corrections were assigned using the revised F-value fence of 1.5.

5.0 Noise Data Reduction

5.1 Direct Read Data Processing

Direct read acoustical data from the Precision Integrating Sound Level Meters (PISLM) (SEL and ALm) were entered into an electronic spreadsheet file along with 10 dB down duration times manually scaled from graphic level recorder strip charts. This information, acquired as control and backup data, are shown in the tables of Appendix A. The electronic spreadsheet also performs calculations to determine empirical duration constants K and Q, as shown below:

SEL − ALm = K x LOG (10 dB Down Duration)

SEL − ALm = 10 x LOG [Q x (10 dB Down Duration)]

The graphic level recorder output, taken as the slow response, PISLM, DC output, provides a qualitative look at the shape of noise event time histories. Time histories for core and repeated core program flyover events at the centerline microphone location are presented in analysis Section 8.10.

5.2 TSC Magnetic Recording Data Reduction

Analog magnetic tape recordings analyzed at the Transportation Systems Center (TSC) facility in Cambridge, Massachusetts were entered into magnetic disc storage after filtering and digitizing using the GenRad 1921 one-third octave real-time analyzer. Recording system frequency response adjustments were applied, assuring overall linearity of the recording and reduction system. The 24, one-third octave sound pressure levels (SPLs) for contiguous one-half second integration periods (spectral time history) make up the "raw data" base for each event. Data reduction followed the basic procedures defined in the references outlined in Section 2.2 of this report.

5.2.1 Ambient Noise

The ambient noise is considered to consist of both the acoustical background noise and the electrical noise of the measurement system. For each event, the ambient level was taken as the five to ten-second time averaged one-third octave band level recorded immediately prior to the event. The ambient noise was used to correct the measured raw spectral data by subtracting the ambient level from the measured noise levels on an energy basis. This subtraction yielded the ambient corrected signal level. The following exceptions are noted:

1. At one-third octave frequencies of 630 Hz and below, if the measured level was within 3 dB of the ambient level, the measured level was corrected by being set equal to the ambient. If the measured level was less than the ambient level, the measured level was not corrected.

4.4 Helicopter Performance Documentation Systems

Two different techniques were utilized to document the helicopter performance characteristics. The objective in focusing attention on the performance characteristics was to attempt to relate variation in acoustical data to variation in critical performance data, such as rotor speed, torque, airspeed, and rate of descent.

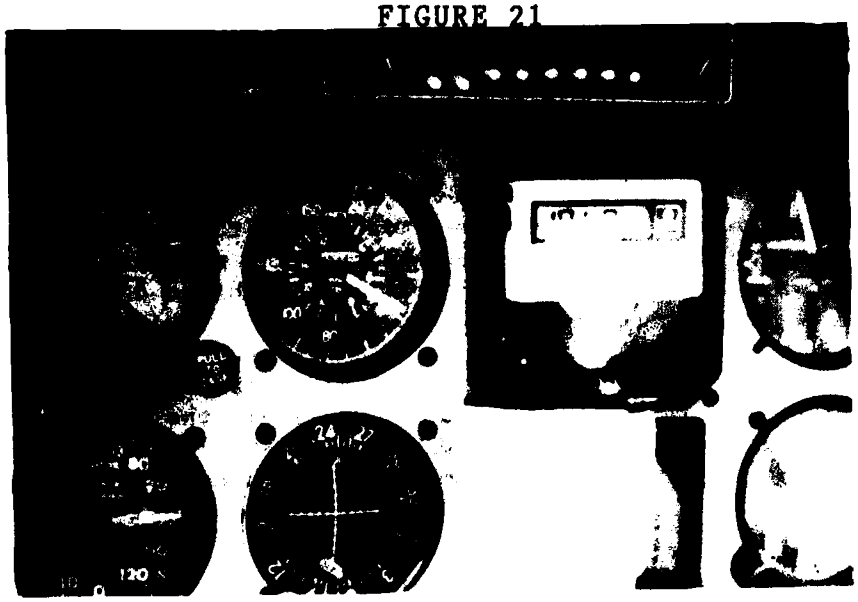
4.4.1 Cockpit Videotape System

A photographer was situated in the rear left seat of the test helicopter equipped with a Panasonic VHS video camera and video cassette recorder. The system specifications of these two units are shown in Table 4. Both systems were powered by internal batteries. The photographer, also equipped with a communications headset coordinated each shot with the flight crew. After the helicopter was stabilized and the data run begun, the photographer would record (videotape) the instrument panel throughout the data acquisition period of the flight event. At the beginning of each data run the flight engineer held up a note pad with the event number written on it for the photographer to record. During the run the flight engineer marked, verbally and/or with a hand signal, when the helicopter was directly over the centerline center microphone location. The photographer was instructed to frame the torque, rate of descent, indicated airspeed, compass, rotor rpm and range time. Figure 21 is a photograph of the cockpit instrumentation panel which the video camera was recording. Upon completion of the test the recorded information was played back using freeze frame features and selected data were entered into a microcomputer file. Appendix J provides a tabular summary of this information.

4.4.2 Cockpit Observer Log

As a backup and to assist the photographer, a flight engineer also was placed onboard. The flight engineer maintained a hand written log which has been transcribed as Appendix K.

FIGURE 21



Instrument panel of the Bell 206L-1
(as taken by video camera operator)

Table 4

Video Camera and Recorder Specifications

<u>Panasonic WV-3230 Color Video Camera</u>

Power Requirements: 12V DC, 5.3W

Standard Illumination: 140 fc/F4.0

Minimum Illumination: 1 fc/F1.4 with 8x Auto Focus Lens
3 fc/F2.0 with 12x Lens

Horizontal Resolution: 350 lines

Lens:

Mount: Bayonet

Focal Length: 10.5 - 84 mm with 8x Auto Focus
10 - 120 mm with 12x

Zoom Ratio: 8x Auto Focus
12x

Max Aperture: F1.4 with 8x Auto Focus
F2.0 with 12x

Filter Diameter: 58 mm for 8x Auto Focus
72 mm for 12x

Weight: 4.6 lbs (2.1 kg) with 8x Auto Focus
4.8 lbs (2.2 kg) with 12x Lens

Built in Time/Data Generator with Stopwatch

S/N Ratio: 46 dB

<u>Panasonic NV-8420 VHS Video Recorder</u>

Weight: 8.4 lbs with Battery

Dimensions: 9.4" W x 3.6" H x 9.5" D

Recording Time: 2 hours

Resolution: 240 lines (color)

S/N Ratio: 45 dB

Playback modes include still frame, frame advance, 1/4 to 1/30 variable slow, picture viewable during multimotion playback.

8.5 Left - Right Directivity Analysis

The left-right directivity analysis was prepared in order to identify the directional acoustical radiation characteristics of the Bell 206-L1 helicopter for the ICAO certification operations. The results presented in this section will aid in inter-series comparisons for the US/Canadian test and provide the basis for intra-test comparisons.

The source directivity provides a further noise source benchmark or "fingerprint" which should not differ significantly from one test to the next. Results of this analysis can be very useful in sorting out whether one model of the Bell 206-L1, L3 is intrinsically different from another model, or whether ambient wind conditions or other external forces are intervening to create divergence in relative left/right side noise levels, and possibly overall certification levels.

Differences in source directivity are often considered to be associated with cross wind effects and a consequential difference in the degree of main rotor - blade vortex interaction.

Examination of Table 8 shows that a strong directional characteristic is present only in the case of approach operations where the right side has levels approximately 6 dB below the centerline values and 4 dB below left side values.

In the case of takeoff operations, left side values are slightly lower than right side values, both in the range of 0.5 to 1.5 dB below centerline values.

Level flyover operations display right side values approximately 0.5 to 1.5 dB above centerline values, while left side values differ very little from centerline values.

Table 8

LEFT SIDE / RIGHT SIDE SOURCE DIRECTIVITY

EPNL VALUES (expressed in dB)

SERIES	LEFT SIDELINE	LEFT RELATIVE TO CENTER	CENTERLINE SITE	RIGHT RELATIVE TO CENTER	RIGHT SIDELINE
A	87.3	-.5	86.8	.5	86.3
AZ	87.7	0	87.7	1.4	86.3
AA	87.3	.2	87.5	1.3	86.2
AY	88.6	-1.6	87	-.3	87.3
B	86.2	-.5	86.7	.2	86.9
BZ	86.5	-1.2	87.7	-.4	87.3
BB	85.9	-.5	86.4	1.0	87.4
BY	87.4	-2.0	89.4	-.4	89.0
C	91	-1.5	92.5	-5.3	87.2
CZ	90.8	-1.7	92.5	-6.1	86.4
CC	90.4	-2.3	92.7	-5.8	86.9
CY	91.4	-1.4	92.8	-5.7	87.1
K	91.2	-1.8	93	-6.0	87.0
KK	90.7	-.8	91.5	-5.5	86.0

8.6 Source Noise Adjustment / Delta 3 Advancing Blade Tip Mach Number Analysis

This section is included in the analysis/discussion portion of the report because the topic, while ultimately involving application of the "Delta 3" source noise correction, remains controversial, and involves proposed changes to the existing Annex 16 procedures. This section fulfills two of the stated objectives: 1.) It provides the basis for intra-test comparisons, and 2.) it evaluates certification testing requirements. This section should be cross-referenced to Section 5.2.10, "Delta 3 Correction."

Physical Process

As the advancing blade Mach number increases, the noise measured on the ground generally increases. This increase in noise level results from an increase in power required (to increase airspeed) up to a Mach number of approximately 0.86 (airfoil dependent), above which noise increases very rapidly due to the effects of near sonic flow over the airfoil and the buildup of a shock wave system.

Changes in Mach number can be associated with changes in any single parameter or combination of the parameters--1) Rotor RPM, 2) Airspeed, 3) ambient temperature--which are the dominant components of the advancing blade Mach number.

PNLTM -- A Function of Advancing Blade Mach Number

"As measured" $PNLT_M$ data acquired for the 500 foot level flyover operation, were normalized for minor altitude deviations from the target reference value. The adjustment function was derived empirically from the 500 and 1000 foot level flyover data for the $PNLT_M$ metric. The function Delta dB = 23 LOG (d1/d2), was used to make the adjustments (see Appendix N).

The normalized $PNLT_M$ data were then plotted versus advancing blade tip Mach number for each of the three certification microphones. The data point scatter plots and regression lines for each set are shown in Figure 22. The actual $PNLT_M$ and Mach data values along with regression analysis results are shown in Table 9.

The first and rather prominent feature of the data is the difference in slope, which implies the need for a separate or unique correction function for each of the three certification microphones.The differences in absolute level are also evident with the advancing blade sideline site having levels approximately 1 dB greater than the retreating side.

In the data correction process, the centerline microphone $PNLT_M$-Mach number slope was used to impose Delta 3 adjustments for all three centerline microphone locations while adjustments at the two sideline sites used the appropriate site specific functions.

FIGURE 22

PNLTm vs. ADVANCING BLADE TIP MACH NUMBER

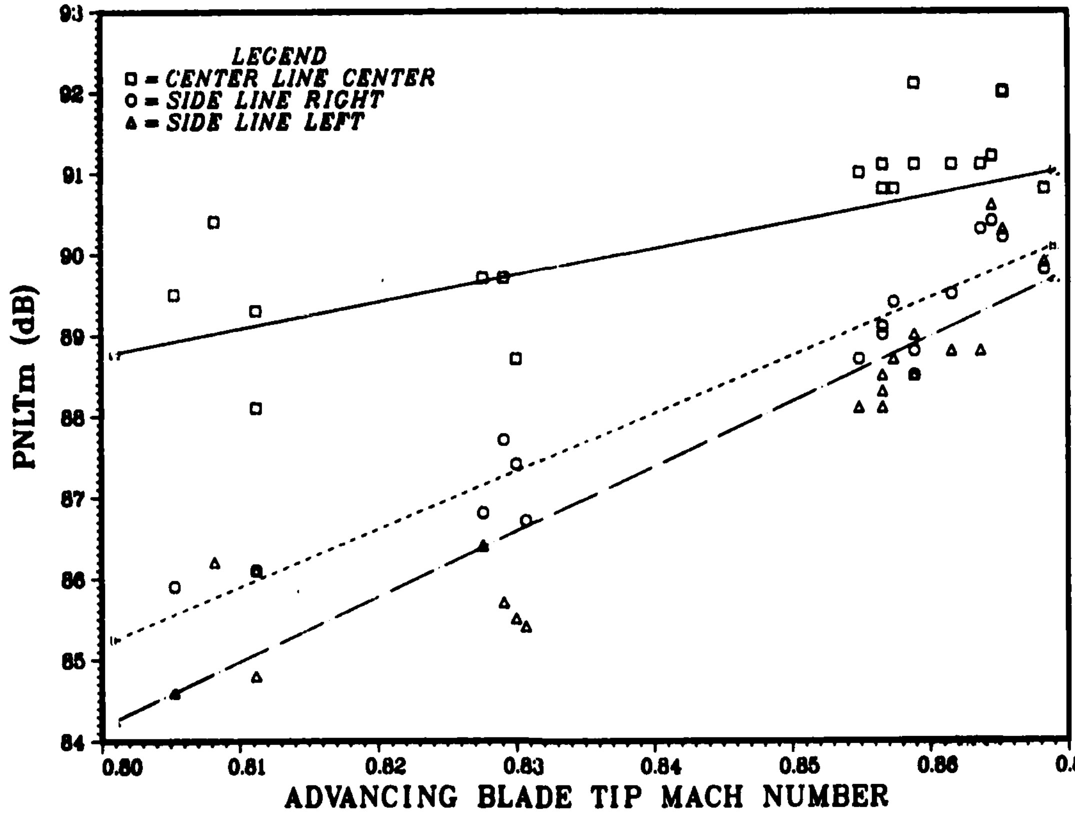


Table 9

LINEAR REGRESSION ON SIDE LINE LEFT DATA SET POINTS

ID	X	Y
A1	.8565	88.5
A2	.8588	89.0
A4	.8573	88.7
A5	.8588	88.5
A6	.8565	88.3
A7	.8565	88.1
A8	.8548	88.1
H17	.8615	88.8
H18	.8652	90.3
H19	.8682	89.9
H20	.8644	90.6
H21	.8636	88.8
I22	.8307	85.4
I24	.8300	85.5
I25	.8291	85.7
I26	.8276	86.4
J28	.8112	86.1
J29	.8053	84.6
J30	.8112	84.8
J31	.8082	86.2

PRED.Y = SLOPE * X + INTERCEPT
= 78.03556 21.77093

CORREL = .9210060 MEAN X = .84377
R SQ. = .8482520 S.D. X = .0219279
STD.ERR = .7435824 MEAN Y = 87.615
TOT VAR = 3.451868 S.D. Y = 1.857920
SAMPLE = 20

LINEAR REGRESSION ON CENTER LINE CENTER DATA SET POINTS

ID	X	Y
A1	.8565	91.1
A2	.8588	92.1
A4	.8573	90.8
A5	.8588	91.1
A6	.8565	91.1
A7	.8565	90.8
A8	.8548	91.0
H17	.8615	91.1
H18	.8652	92.0
H19	.8682	90.8
H20	.8644	91.2
H21	.8636	91.1
I22	OUT OF BOUNDS	
I24	.8300	88.7
I25	.8291	89.7
I26	.8276	89.7
J28	.8112	88.1
J29	.8053	89.5
J30	.8112	89.3
J31	.8082	90.4

PRED.Y = SLOPE * X + INTERCEPT
= 38.72867 57.80053

CORREL = .8124810 MEAN X = .8444579
R SQ. = .6601253 S.D. X = .0223060
STD.ERR = .6378397 MEAN Y = 90.50526
TOT VAR = 1.130526 S.D. Y = 1.063262
SAMPLE = 19

LINEAR REGRESSION ON SIDE LINE RIGHT DATA SET POINTS

ID	X	Y
A1	.8565	89.1
A2	.8588	88.8
A4	.8573	89.4
A5	.8588	88.5
A6	.8565	89.1
A7	.8565	98.0
A8	.8548	88.7
H17	.8615	89.5
H18	.8652	90.2
H19	.8682	89.8
H20	.8644	90.4
H21	.8636	90.3
I22	.8307	86.7
I24	.8300	87.4
I25	.8291	87.7
I26	.8276	86.8
J28	.8112	86.1
J29	.8053	85.9
J30	.8112	86.1
J31	OUT OF BOUNDS	

PRED.Y = SLOPE * X + INTERCEPT
= 69.11120 29.95140

CORREL = .9606676 MEAN X = .8456421
R SQ. = .9228821 S.D. X = .0208220
STD.ERR = .4280427 MEAN Y = 88.39474
TOT VAR = 2.243860 S.D. Y = 1.497952
SAMPLE = 19

The reference Mach Number was calculated using a reference temperature of 59 degrees Fahrenheit, a rotor speed of 394 RPM, and an airspeed of 117 knots. The Mach Number values for specific noise events were calculated using indicated airspeed and 10 meter temperature data calibrated onboard. Outside air temperature (OAT) was not available.

ISSUES ASSOCIATED WITH THE "DELTA 3", SOURCE NOISE ADJUSTMENT

In the course of conducting analyses contained in this section (and through discussions and meetings with other participants in the ICAO HNMRP), the following set of issues has emerged for consideration in the HNMRP evaluation process.

ISSUE 1: Choice of Metric

The current language in the Annex requires use of EPNL to develop an airspeed / noise level sensitivity curve. It has been recommended that this section should be revised to require development of a sensitivity curve using $PNLT_M$ instead of EPNL. When one plots EPNL versus airspeed, the resulting function reflects changes in noise level with both 1) changes in event duration associated with the change in airspeed and attendant changes in groundspeed, and 2) changes in source noise characteristics as discussed above. By using the EPNL function, one is essentially double counting or negating groundspeed-dependent duration effects.

ISSUE 2: Multiple Functions

The section of Annex 16 which addresses the Delta 3, Source Noise Correction, should be revised to specify the need for separate $PNLT_M$ versus Mach Number functions for the centerline and each sideline measurement site.

ISSUE 3: Reference Temperature for Mach Calculations

ICAO Annex 16, Chapter 8, Section 8.6.1.5b) allows for either 77F-70% RH or 59F-70% RH as the reference atmosphere for implementing atmospheric absorption corrections. The 77F-70% RH was used in this report for absorption correction. In the case of Delta 3, the advancing blade Mach Number correction 59F has been used to establish the reference Mach Number for the ICAO LFO operation for consistency with aerodynamic performance reference data. The flow field compressibility effects which determine source noise generation are identical to those used to determine performance parameters and are characterized by advancing blade tip Mach number. Establishment of a single reference temperature for both Delta 1 and Delta 3 would be a goal worth striving for.

As seen from Table 10, the reference temperature will significantly influence the certificated noise level, and, in effect, regulatory stringency. A one decibel difference in the corrected EPNL can be associated with the choice of either 59 F or 77 F as the reference temperature.

Table 10

NOISE LEVEL SENSITIVITY TO ADVANCING BLADE MACH NUMBER COMPONENT VARIATION

	TEST TEMP (DEG F)	SOUND C (FPS)	VIAS (KTS)	VTRANS (FPS)	ROTOR V (RPM)	ROTOR V (RPS)	ROTOR D (FT)	ROT V (FPS)	ROT M	TRANS M	ADV M	DELTA DB 20*T-R	DELTA DB LOG 150*T/R
-10 DEG F	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989		
+5 KNOTS	67	1124.93	105	177.345	398	6.63	37.01	771.26	.6856061	.1576496	.8432557	-0.44	-1.73
+1% RPM													
+10 DEG F	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989		
-5 KNOTS	87	1146.09	95	160.455	390	6.50	37.01	755.76	.6594202	.1400017	.7994219	0.43	1.74
-1% RPM													
	77	1135.56	100	168.9	402	6.70	37.01	779.01	.6860140	.1487369	.8347510	-0.71	-2.82
	77	1135.56	100	168.9	386	6.43	37.01	748.01	.6587100	.1487369	.8074469	-0.16	-0.65
	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989		
1% IAS	77	1135.56	102	172.278	394	6.57	37.01	763.51	.6723620	.1517117	.8240737	-0.06	-0.24
	77	1135.56	98	165.522	394	6.57	37.01	763.51	.6723620	.1457622	.8181242	0.06	0.24
	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989		
5 % IAS	77	1135.56	105	177.345	394	6.57	37.01	763.51	.6723620	.1561738	.8285358	-0.15	-0.59
	77	1135.56	95	160.455	394	6.57	37.01	763.51	.6723620	.1413001	.8136621	0.15	0.59
	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989		
10% IAS	77	1135.56	110	185.79	394	6.57	37.01	763.51	.6723620	.1636106	.8359726	-0.30	-1.17
	77	1135.56	90	152.01	394	6.57	37.01	763.51	.6723620	.1338633	.8062252	0.30	1.19
	70	1128.13	100	168.9	394	6.57	37.01	763.51	.6767906	.1497166	.8265073		
5 DEG F	75	1133.44	100	168.9	394	6.57	37.01	763.51	.6736184	.1490149	.8226333	0.08	0.31
	65	1122.79	100	168.9	394	6.57	37.01	763.51	.6800081	.1504284	.8304364	-0.08	-0.31
	70	1128.13	100	168.9	394	6.57	37.01	763.51	.6767906	.1497166	.8265073		
10 DEG F	80	1138.73	100	168.9	394	6.57	37.01	763.51	.6704904	.1483229	.8188134	0.15	0.61
	60	1117.43	100	168.9	394	6.57	37.01	763.51	.6832718	.1511504	.8344222	-0.16	-0.62
	70	1128.13	100	168.9	394	6.57	37.01	763.51	.6767906	.1497166	.8265073		
15 DEG F	85	1143.99	100	168.9	394	6.57	37.01	763.51	.6674056	.1476405	.8150461	0.23	0.91
	55	1112.04	100	168.9	394	6.57	37.01	763.51	.6865830	.1518829	.8384659	-0.24	-0.94
59 F REF	59	1116.35	100	168.9	394	6.57	37.01	763.51	.6839302	.1512960	.8352263		
77 F REF	77	1135.56	100	168.9	394	6.57	37.01	763.51	.6723620	.1487369	.8210989	0.28	1.11

ISSUE 4: Airspeed Selection

The actual or true airspeed is an important component parameter of the advancing Mach Number. As a matter of expediency, the indicated airspeed is often used in noise measurement / flight test programs. While a matter of great familiarity to most readers, the difference between these two values is reviewed and noise level correction implications are evaluated in the following paragraphs.

Background Review: Airspeed Indication

In the helicopter noise certification environment, indicated airspeed is at least thrice removed from true airspeed. An FAA "approved instrument" (airspeed) may vary up to 3 knots (+/-) in accuracy. This allowable error is called the instrument error. Indicated airspeed corrected for instrument error is called "true indicated airspeed" (TIAS).

When the airspeed indication system is installed in the helicopter, the pitot tubes (static and dynamic ports) are located in such a way that the air flow creates an accurate reading at the instrument. Typically, a flow fence is placed upstream of the ports to achieve the proper flow over the ports. The allowable "position error" for an FAA approved installation is effectively 5 knots for an airspeed of 117 knots. True indicated airspeed corrected for position error is called "calibrated airspeed" (CAS).

At this point it is important to note that the instrument error and the position error can combine to result in an error of 8 knots between the cockpit indicated value and the true airspeed.

Ignoring compressibility effects (valid for low forward flight Mach Number), the true airspeed can now be calculated by dividing the CAS by the square root of the air density ratio. Thus, it is seen that for non-standard day temperature and pressure, and in the absence of instrument and position corrections, cockpit indicated airspeed may vary from true airspeed on the order of 10 knots at sea level.

Examination of Table 10 will reveal that a 10 knot airspeed deviation from a reference value can lead to a 1 dB difference in noise level for the sensitive function.

It is recommended that each certification test in the future incorporate an airspeed calibration as the first step. In the absence of wind or with wind normalized true airspeed should equal the ground speed. The cockpit indicated values can then be easily calibrated using a measure of ground speed. Ground speed can be obtained through any independent tracking system such as radar, laser, or kinotheodolite. Ground speed can also be obtained easily by measuring the time necessary to fly a known course. A 10,000 foot runway would make an excellent test range. In each case, when any wind is present, level flyovers should be conducted in both directions and results averaged.

ISSUE 5: Test Temperature Measurement Location and Measurement Accuracy

In cases where the outside air temperature (OAT) sensing device is located in a shielded fashion where directed sunlight is avoided and ram rise effects are negligible (as is the case for the Bell 206-L1, 3) the instrument accuracy is +/-1 degree. However, because of the small scale on the instrument, it is difficult to read within much better than +/-2 degrees. These potential errors in the identification of temperature (for establishing the speed of sound) are negligible influences in computing the advancing blade tip Mach Number. It has been pointed out, however, that certain helicopter models with unshielded nose temperature probes, exposed to direct sunlight and ram effects, may be in error up to 4 degrees Fahrenheit even though displayed digitally with great precision. Even this error is not likely (alone) to impose significant influence on Mach values.

ISSUE 6: Rotor Speed Identification

The dominant role of rotor speed in controlling the resulting advancing blade tip Mach Number is well known. The accuracy with which RPM is indicated is a matter of interest as a potential factor in noise level variation. The main rotor RPM is usually indicated using a relatively small radial with poor resolution and graduations. Discussions with manufacturers and FAA certification engineers indicate that a (+/-) 1.5% aggregate error is typical for indication and reading rotor RPM. This suggests that one helicopter indicating 101% and another indicating 99% may in fact be 3% apart in rotor RPM.

It is recommended that ICAO HNMRP participants explore various techniques for field calibration / verification of rotor RPM. One more obvious possibility is the use of narrow band, FFT, acoustical analysis to determine the rotor fundamental rotational frequency. Difficulties may involve assuring that no Doppler shifting is taking place in the time record under analysis.

Another possibility is a technique in which a camera operating with a slow shutter speed (1/15 second) photographs the helicopter as it passes over the center microphone location. For a rotor speed of 400 RPM, an arc of 0.444 revolutions (160 degrees) would be subtended in the photographic image. In the case of a shutter speed of 1/30 second, an angle of 80 degrees would be subtended in the image as computed using the simple relationship shown below:

RPM x 6 x (shutter speed in seconds) = angle subtended

This technique is very dependent on an accurate value for shutter speed. It may be necessary to attach a device to the camera to accurately measure the speed. Other questions may arise with regard to the mechanism of opening and closing the shutter and their influences on effective shutter speed. The process of measuring the subtended angle may also involve difficulties. Slow (fine grained) film would be the logical choice for reducing the fuzziness of the image likely to be produced.

ISSUE 7: No Correction Window for Mach Deviations

Analysis of the variation in $PNLT_M$ with variation in components of Advancing Blade Mach Number:

The summary in Table 2 provides information necessary to assess the sensitivity of $PNLT_M$ values to variations in advancing blade tip Mach Number associated with changes in rotor speed, airspeed and ambient temperature. The changes in noise level are computed for a relatively weak function, (tip Mach numbers below 0.85),

Delta dB = 20 * (Mt - Mr)

similar in sensitivity to the Bell 206-L1, centerline microphone location, and an arbitrarily selected (but typical) sensitive Mach Number function,

Delta dB = 150 x LOG (Mt/Mr)

similar to the relationship one might encounter in the Mach Number range over 0.85.

In cases where a helicopter has an advancing blade tip Mach number below 0.85, the effects of temperature are not such a concern. For example, in the case of the Bell 206 L-3, the US test results showed that only a 1 dB change in noise level would occur with a 50 degree Fahrenheit change in ambient temperature.

However, if the blade tip Mach Number increased only 0.01 to 0.02 above 0.85, a 20 degree Fahrenheit change would lead to a change in noise level of several decibels as seen in the work of Schmitz and Yu (Ref. 9). When one considers the projections of the helicopter industry that helicopters will routinely operate in the 160 to 200 knot range it is clear that blade tip Mach Numbers will increase into the 0.86 to 1.0 range, resulting in the need to include the effects of ambient temperature in a data adjustment scheme.

It is seen (for the sensitive function) that either a rotor RPM deviation of 1%, or an airspeed deviation of 5%, or a temperature deviation of 5 degrees Fahrenheit taken individually will result in about a one-half decibel change in noise level. If the three combine, an additive error of 1.75 decibels results, as shown in Table 10. Thus it is seen that apparently minor deviations from reference conditions may result in variation in noise levels on the order of +/- 2 decibels. This shows that one could encounter up to a 4 decibel difference in level flyover noise levels for nominally small differences in test conditions.

In summary, the Delta 3 correction is extremely vulnerable to "minor deviations " in reference conditions which when additive can lead to significant differences in noise level. For this reason it is recommended that the concept of "no correction windows" be abandoned in this case, and actual test temperature, airspeed (true airspeed) and (calibrated) rotor RPM be utilized in all data normalization procedures. This recommendation represents a more conservative approach than the no correction window suggested at the Working Group II/3 meeting in Tokyo in March 1985.

8.7 Ground Versus 1.2 Meter Microphone Analysis

Differences between noise levels acquired for ground mounted and 1.2 meter mounted microphone systems are examined in this section. The observed differences in noise levels are used to provide a figure of merit (ie., a surrogate for the complex impedence useful in characterizing the surface). For example, the difference between $PNLT_M$ values for the 1.2 meter and the ground microphones should provide a qualitative indication of the acoustical reflective properties of the ground surface. A (test to test) comparison of these experimental figures of merit should reveal whether similar ground impedance values exist in the various test programs.

The ground microphone employed in this measurement program was inverted 7 millimeters above an area (approximately 1/2 meter in diameter) in which all grass had been clipped entirely down to the root mat surface.

In this analysis an initial assumption was that the ground-mounted microphone experiences phase coherent pressure doubling (a reasonable assumption at the frequencies of interest). At the 1.2 meter microphone, one would expect to see a lower value, somewhere within the range of 0 to 3 dB, depending on the degree of random versus coherent phase between incident and reflected sound waves. It is also possible to experience a net cancellation between the two sound paths. If cancellation occurs at dominant frequencies then one is likely to observe noise levels at the 1.2 meter microphone more than 3 dB below the ground microphone values. In fact significant cancellation is observed with instances of 5 to 6 dB (weighted metric) lower levels at the 1.2 meter microphone.

Examination of the results presented in Tables 11 through 17 shows that most differences do fall between 3 and 5 dB with some differences on the order of 6 dB. In these tables one may note that while cancellation appears to be dominant (deltas greater than 3 dB) in the case of level flyover and takeoff, the approach operation is controlled by reinforcement (deltas less than 3 dB) at the 1.2 meter microphone. Interestingly enough, one observes similar A-Weighted time history shapes for the takeoff and level flyover operations with a more uniquely "haystack" time history shape for the approach operation.

The results of this analysis will be compared with findings presented in other HNMRP participant reports.

Table 11

COMPARISON OF GROUND AND 1.2 METER MICROPHONE DATA

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE 1.2m MIC	SAMPLE SIZE GRD MIC	TARGET IAS		DELTA dB= (GND MIC) - (1.2 MIC) SEL	AL	EPNL	PNLTM
A	1	150 M. LFO 0.9 VH	7	6	117 kts.		3.5	4.0	3.7	4.2
AA	2	150 M. LFO 0.9 VH	6	6	117 kts.		3.3	3.6	3.8	3.9
AZ	1	150 M. LFO 0.9 VH	4	4	117 kts.		2.8	2.9	2.9	3.0
AY	2	150 M. LFO 0.9 VH	11	11	117 kts.		3.2	3.5	3.6	3.9
						AVERAGE:	3.2	3.5	3.5	3.8

Table 12

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE		TARGET IAS	DELTA dB= (GND MIC) – (1.2 MIC)			
			1.2m MIC	GRD MIC		SEL	AL	EPNL	PNLTM
B	1	ICAO TAKEOFF	9	9	57 kts.	2.5	2.2	2.9	2.7
BB	2	ICAO TAKEOFF	7	6	57 kts.	3.2	3.4	3.9	3.9
BZ	1	ICAO TAKEOFF	5	5	57 kts.	2.5	2.6	3.0	3.0
BY	2	ICAO TAKEOFF	7	7	57 kts.	2.9	3.1	3.6	3.8
					AVERAGE:	2.8	2.8	3.4	3.4

Table 13

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE		TARGET IAS	DELTA dB= (GND MIC) – (1.2 MIC)			
			1.2m MIC	GRD MIC		SEL	AL	EPNL	PNLTM
C	1	6 DEGREE APPROACH	10	10	57 kts.	2.7	2.8	2.6	2.4
CC	2	6 DEGREE APPROACH	8	7	57 kts.	2.5	2.3	2.4	2.3
CZ	1	6 DEGREE APPROACH	5	5	57 kts.	2.7	2.9	2.5	2.5
CY	2	6 DEGREE APPROACH	9	9	57 kts.	2.7	2.8	2.7	2.5
					AVERAGE:	2.7	2.7	2.6	2.4

Table 14

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE		TARGET IAS	DELTA dB= (GND MIC) – (1.2 MIC)			
			1.2m MIC	GRD MIC		SEL	AL	EPNL	PNLTM
G	1	300 M. LFO 0.9 VH	7	7	117 kts.	3.5	3.8	3.7	3.9
H	1	150 M. LFO 1.0 VH	5	5	130 kts.	3.9	4.0	3.9	5.5
I	1	150 M. LFO 0.8 VH	4	4	104 kts.	3.6	3.8	3.6	3.5
J	1	150 M. LFO 0.7 VH	4	5	91 kts.	2.9	2.7	2.8	2.8

Table 15

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE		TARGET IAS	DELTA dB= (GND MIC) – (1.2 MIC)			
			1.2m MIC	GRD MIC		SEL	AL	EPNL	PNLTM
M	1	BELL APPROACH	5	5	SEE TEXT	3.2	3.0	3.1	2.9
MM	2	BELL APPROACH	5	5	SEE TEXT	2.8	3.0	2.7	3.0

Table 16

TEST SERIES	PILOT	OPERATION	SAMPLE SIZE		TARGET IAS	DELTA dB= (GND MIC) – (1.2 MIC)			
			1.2m MIC	GRD MIC		SEL	AL	EPNL	PNLTM
K	1	6 DEGREE APPROACH	5	5	57 kts.	2.8	2.7	2.5	2.5
KK	2	6 DEGREE APPROACH	6	6	57 kts.	2.6	2.6	2.5	2.5

8.8 Air to Ground Acoustical Propagation Analysis

This analysis will be used in intra-test comparisons conducted in the HNMRP evaluation process. The level flyover operations conducted at 150 meters and 300 meters target altitudes provided the opportunity to assess empirically the influences of spherical spreading and atmospheric absorption at the time of the flight test program. Through utilization of both noise and position information at each of the three flight track centerline locations (microphones 5, 1 and 4), it was possible to calculate air-to-ground propagation constants. In each case "as measured" acoustical data, test series mean values, were used along with test series average test altitudes. Analyses were conducted with initial "as measured" data. A minor revision in processing methodology changed values on the order of 0.1 to 0.2 dB. Thus, one observes minor differences betwen Appendix B levels ("As Measured" data) and levels in Appendix N. Average propagation coefficients are unaffected. The implicit assumption in grouping centerline microphone data to form an ensemble average is that the source variation during the overflight is only random variation.

The empirical propagation constant (K) is calculated for each metric as follows:

(Sound Level 1 - Sound Level 2) = K x LOG (distance 2 / distance 1)

Propagation constants have been computed for the EPNL, PNLTM, PNL, SEL and ALm metrics. Because the ICAO certification level flyover operation was conducted four separate times during this test program, there are four sets of constants available for the following test series combinations:

Series A and G
Series AA and G
Series AY and G
Series AZ and G

The table shown below summarizes the results of the propagation analyses, shown in detail in the tables of Appendix N.

Table 17

SUMMARY TABLE OF PROPAGATION COEFFICIENTS *

	INTENSITY METRICS			ENERGY METRICS	
SERIES	ALM	PNL	$PNLT_M$	SEL	EPNL
A/G	19	21	20	12	13
AA/G	19	21	21	13	14
AY/G	21	23	23	13	15
AY/G	18	20	20	11	12
AVERAGE	19	21	21	12	14

* ALL VALUES ROUNDED

The propagation coefficients for the intensity, maximum level metrics tend toward a value of 20, which suggests that the principal loss mechanism is spherical spreading of energy with relatively little atmospheric absorption.

The energy dose metrics have propagation coefficients which reinforce the notion of a 7 log multiplier for duration effects. This is seen in that the difference between the intensity coefficient and the energy coefficient is a value of 7 rather than the theoretical value of 10.

These results will be compared with the values observed in other noise measurement flight test exercises being conducted around the world as part of the HNMRP.

8.9 Static Data Analysis

The analyses contained in this section will be used in intra-test comparisons to examine helicopter noise source characteristics in the absence of forward flight effects. Included in this section are discussions and analyses of a number of the more salient features and characteristics of the static operational data. Because a complete set of static operations was conducted on two different test days, observations are also provided on day-to-day variation.

8.9.1 Hard and Soft Path Noise Levels at 150 Meters

Static noise directivity tests were conducted with microphones located 150 meters from the helicopter and then 300 meters from the helicopter. This section details the 150 meter test.

Hover in Ground Effect (HIGE) Operations

Hover in ground effect data tables are shown in Appendix D. Figures 23 and 24 show the static directivity plots for the HIGE operations on August 27 and August 29. The hard and soft propagation paths for both days are shown on one plot in Figure 25.

A. Hard Propagation Surface

1. The directivity maximum occurs at the tail.

2. The strong directivity pattern shown for the hard path propagation appears to be repeatable from one day to the next.

3. A noise radiation minima appears near the nose of the helicopter.

4. Spatial average LEQ values from one day to the next vary somewhat, 76.8 on the 27th to 78.4 on the 29th.

5. Emission angle indexed, A-weighted LEQ values fall in the range from 68 to 82 dB on the 27th and 69 to 85 dB on the 29th.

6. The dominant spatial average A-weighted acoustical energy is in the 400 to 630 HZ region.

7. Variability of noise levels over the sample period is similar on each test day.

8. Hard path directivity patterns are very similar for the 27th and 29th.

FIGURE 37

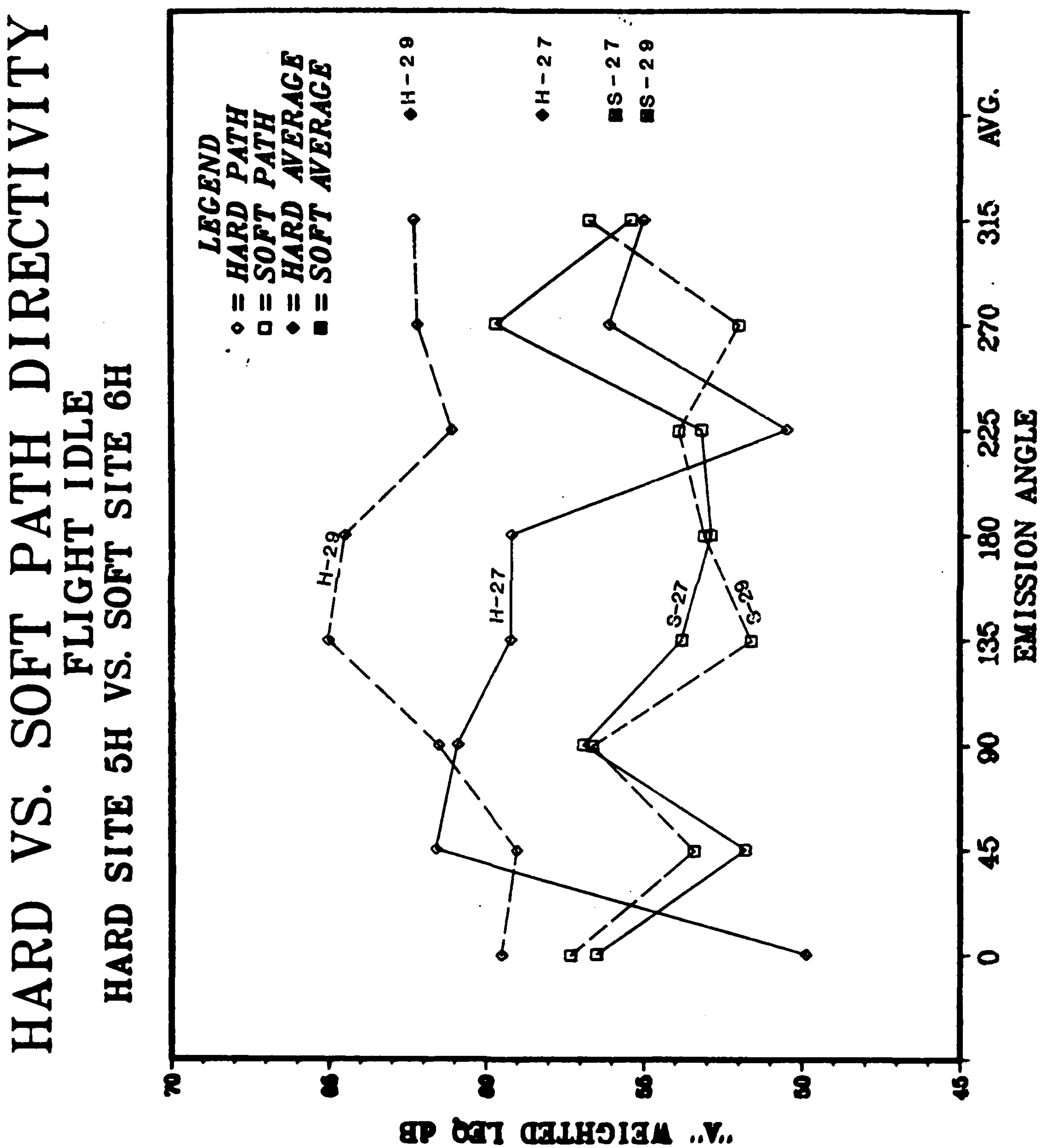

HARD VS. SOFT PATH DIRECTIVITY
FLIGHT IDLE
HARD SITE 5H VS. SOFT SITE 6H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
H-29
H-27
S-27
S-29
0
45
90
135
180
225
270
315
AVG.
EMISSION ANGLE
"A" WEIGHTED LEQ dB

FIGURE 35

HARD VS. SOFT PATH DIRECTIVITY
FLIGHT IDLE
HARD SITE 5H VS. SOFT SITE 6H AUG. 27, 1984

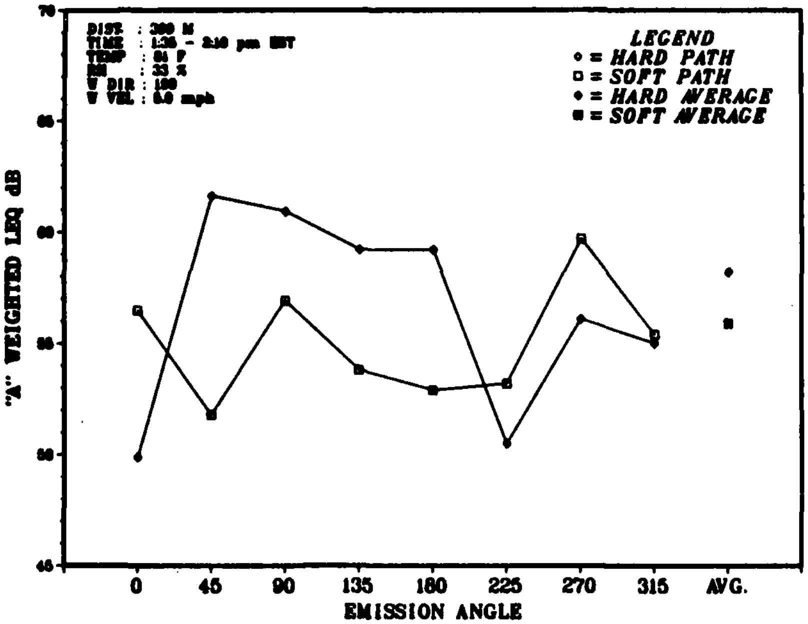
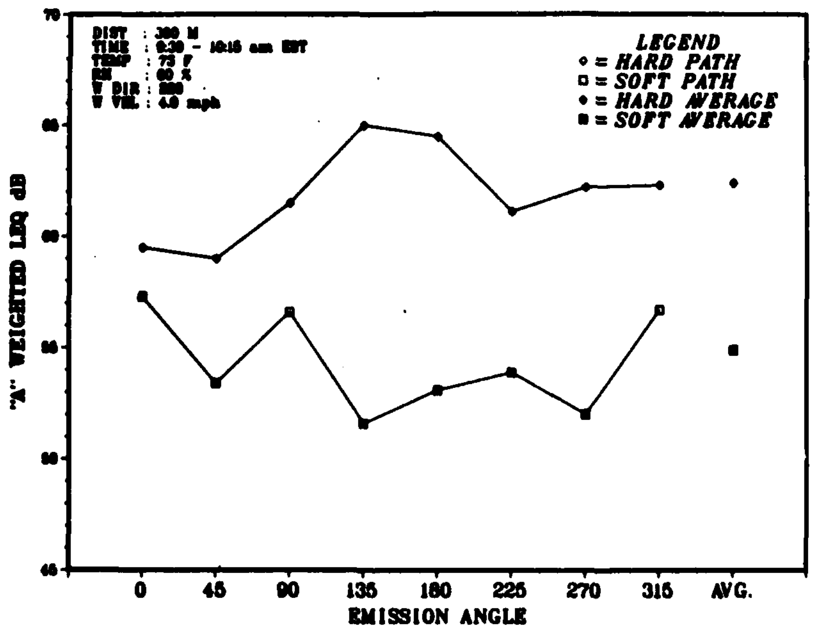


FIGURE 36

HARD VS. SOFT PATH DIRECTIVITY
FLIGHT IDLE
HARD SITE 5H VS. SOFT SITE 6H AUG. 29, 1984



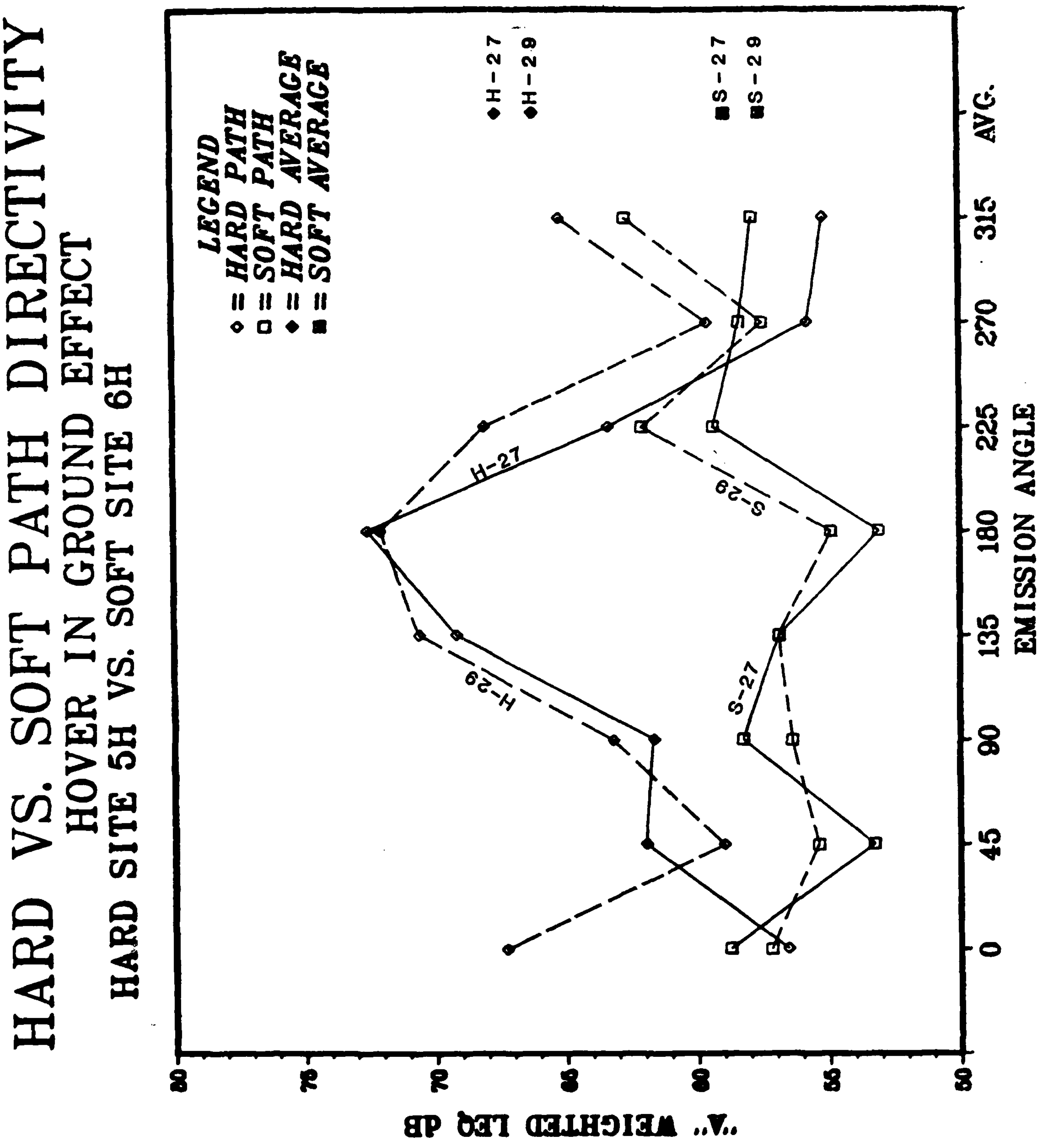
Flight Idle

Figures 35 and 36 show direction indexed noise levels for the flight-idle operations on August 27 and 29 at a distance of 300 meters. Each figure includes a curve for hard and soft paths. All four curves are combined in Figure 37 which displays both day-to-day and hard-soft differences. The soft path directivity patterns for the 27th and 29th agree quite well while the hard path patterns differ significantly. Nonetheless, average hard path noise levels are greater than average soft path levels on each test day, demonstrating the dominant path influence.

Ground Idle

Figures 38 and 39 show direction-indexed noise levels for the ground idle operations conducted on August 27 and 29 at a distance of 300 meters. Each figure includes a curve for hard and soft paths. All four curves are combined in Figure 40 displaying both day-to-day and hard-soft differences. The soft and hard path directivity patterns differ radically from one test day to the next, with the hard and soft levels measured on the 29th exceeding (by a large amount) those measured on the 27th. Test day meteorological conditions emerge as the dominant influence. It appears that as the signal to noise ratio decreases, the influences of meteorology exceed those of ground surface composition along the propagation path.

FIGURE 34



HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 5H VS. SOFT SITE 6H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
H-27
H-29
S-27
S-29
"A" WEIGHTED LEQ dB
50
55
60
65
70
75
80
EMISSION ANGLE
0
45
90
135
180
225
270
315
AVG.

FIGURE 33

HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 5H VS. SOFT SITE 6H AUG. 27, 1984

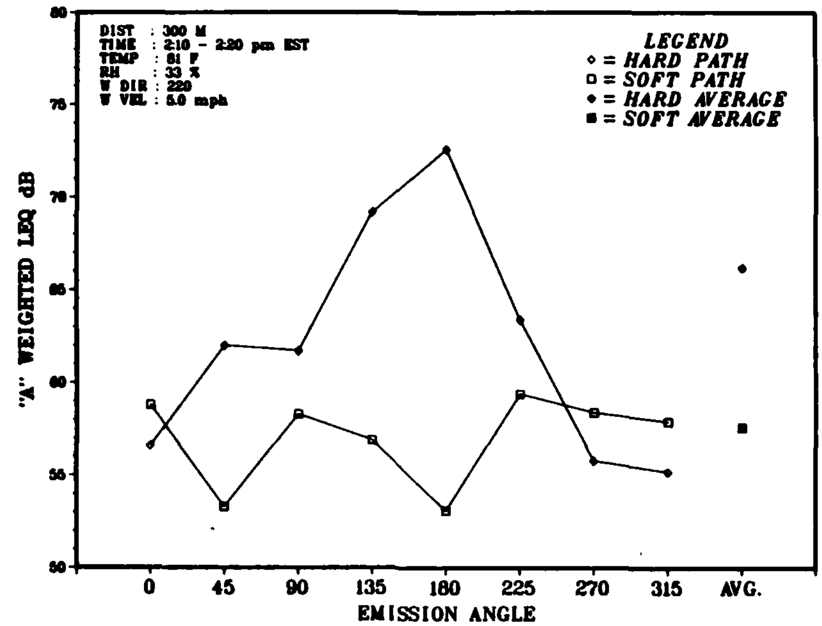
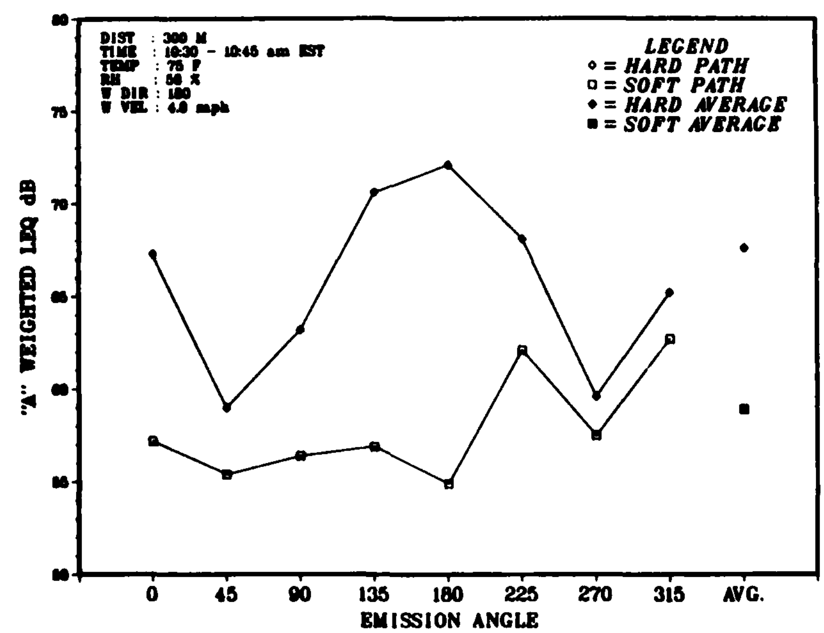


FIGURE 32

HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 5H VS. SOFT SITE 6H AUG. 29, 1984



SOFT SITE PROPAGATION CONSTANTS:

	HIGE	FI	GI
August 27........	33	25	26
August 29........	28	31	32

Observations:

Even though the sound levels at the 500 foot distance are actually higher for hard sites than soft sites, one observes higher hard path attenuation rates from 500 to 1000 feet.

Over the first 500 feet the rate of attenuation, or loss, for the hard surface is smaller than the loss for a grass surface. However, in the next 500 feet the hard path losses exceed those for the soft path. Nonetheless the 1000 foot hard path levels remain higher than the 1000 foot soft path levels.

In the table below one can observe the diminished difference between hard and soft path noise levels over large distances. This diminished difference is reflected in the larger attenuation rates along the hard path.

HIGE OPERATIONS HARD minus SOFT
(spatial average LEQ)

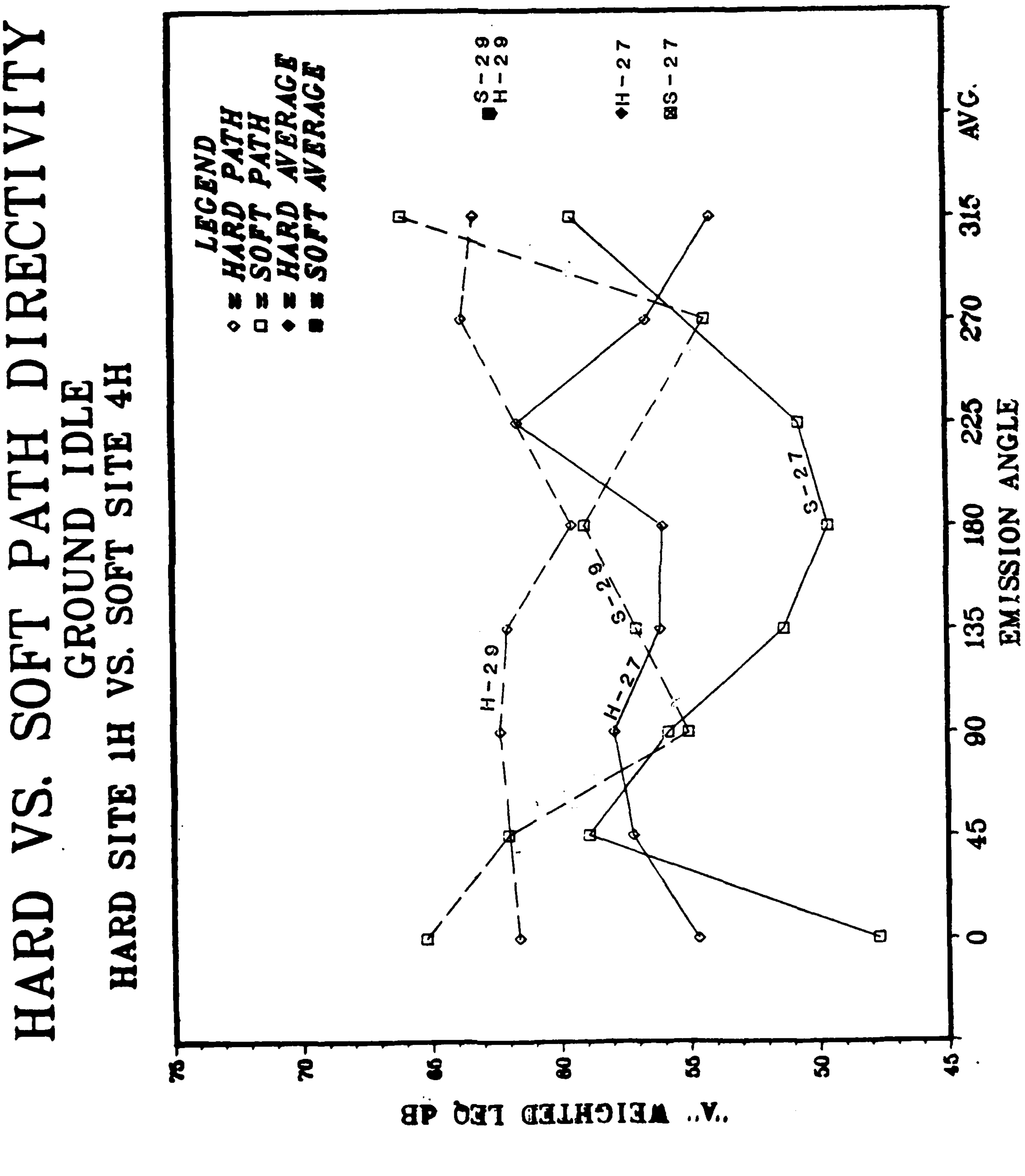
	Aug. 27th	Aug. 29th
150 meters (500 feet)....	9.3	11.3
300 meters (1000 feet)...	8.6	8.7

8.9.2 Hard and Soft Path Noise Levels at 300 Meters

Hover-in-Ground Effect

Figures 32 and 33 show the direction-indexed noise levels for the HIGE operations on August 27 and 29 at a distance of 300 meters. Each figure includes a curve for hard and soft paths. All four curves are combined in Figure 34 which displays both day-to-day and hard-soft differences. The HIGE operation levels are, in a coarse sense, similar on each test day with a maximum near 180 degrees. On the average, hard site noise levels are 10 dB higher than soft path levels.

FIGURE 31



HARD VS. SOFT PATH DIRECTIVITY
GROUND IDLE
HARD SITE 1H VS. SOFT SITE 4H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
S-29
H-29
H-27
S-27
"A" WEIGHTED LEQ dB
75
70
65
60
55
50
45
0
45
90
135
180
225
270
315
AVG.
EMISSION ANGLE

FIGURE 29

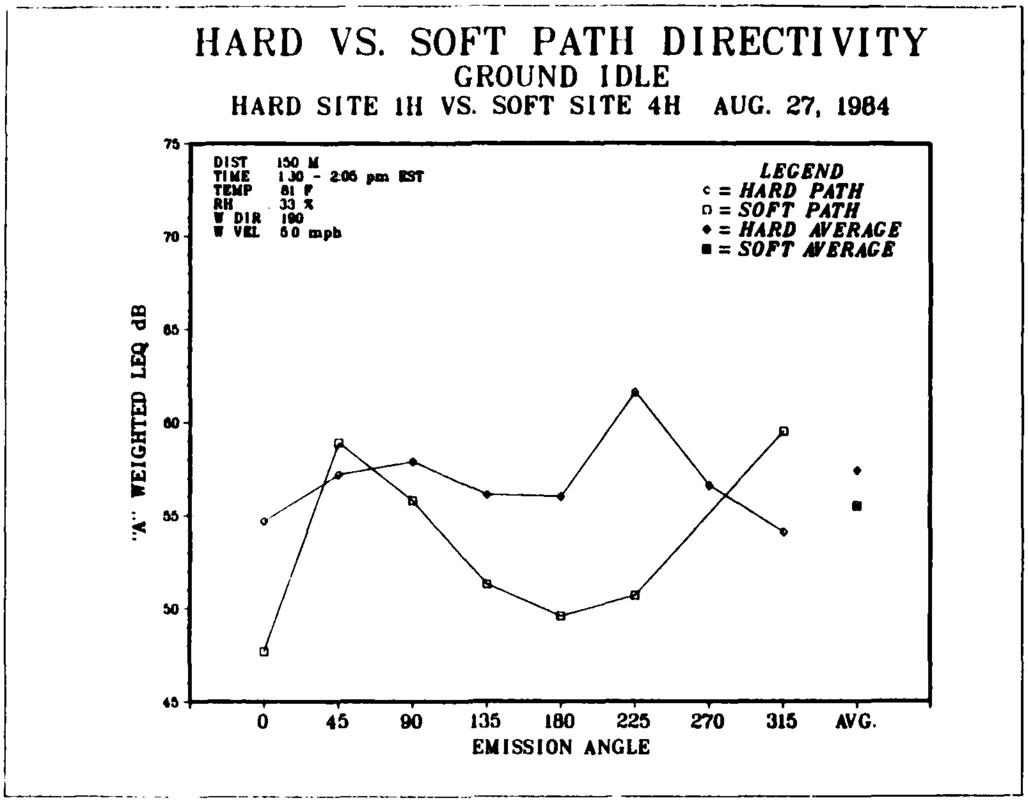
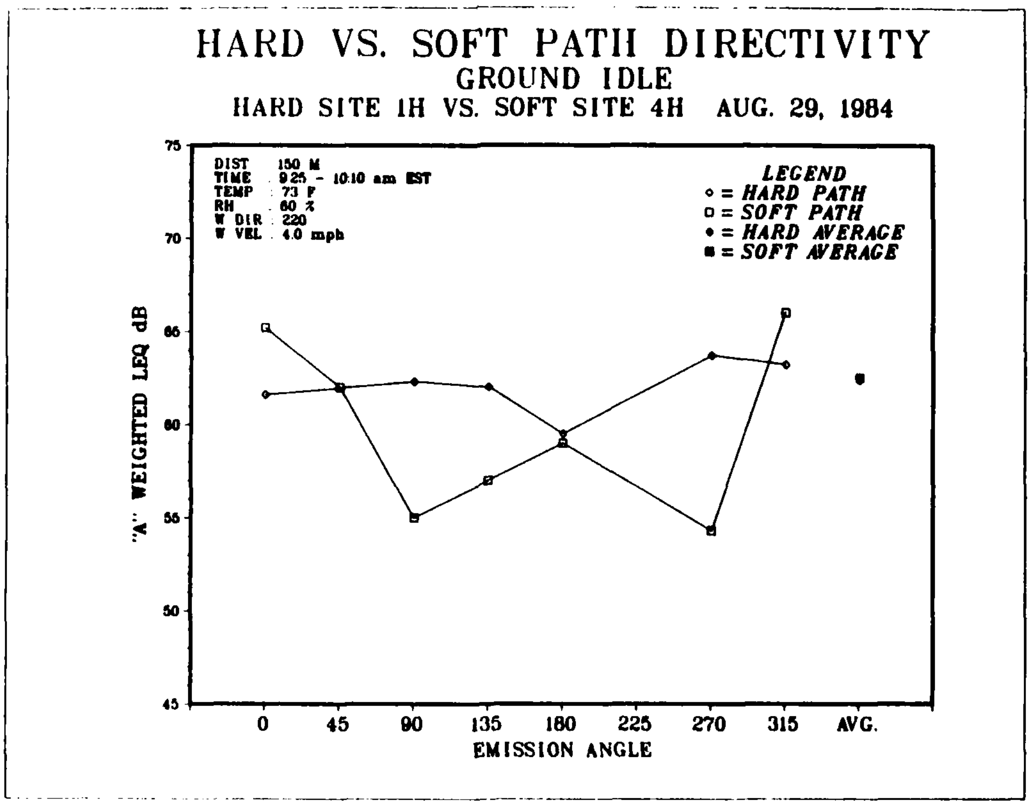


FIGURE 30



Ground Idle (GI) Operations

Ground idle data are presented in the tables of Appendix D. Plots showing the ground idle source directivity characteristics are shown on Figures 29 and 30. The hard and soft propagation paths for both days are shown on one plot in Figure 31.

A. Hard Propagation Surface

1. GI directivity patterns change significantly from one day to the next.

2. Spatial average values were 57.4 on the 27 and 62.4 dB on the 29th.

3. Emission angle indexed LEQ values ranged form 54 to 62 dB on the 27th and 59 to 64 db on the 29th.

4. The dominant spatial average A-weighted acoustical energy is in the 250 to 1000 Hz region.

B. Soft Propagation Surface

1. Directivity patterns change significantly from day to day.

2. Spatial average values differ significantly from one day to the next (55.5 dB on the 27th, 62.5 dB on the 29th).

3. Emission angle indexed LEQ values ranged from 47 to 60 dB on the 27th and 54 to 66 dB on the 29th.

4. The dominant spatial average A-weighted acoustical energy is in the 3000 to 4000 Hz region.

Evaluation of Static Data Propagation Characteristics

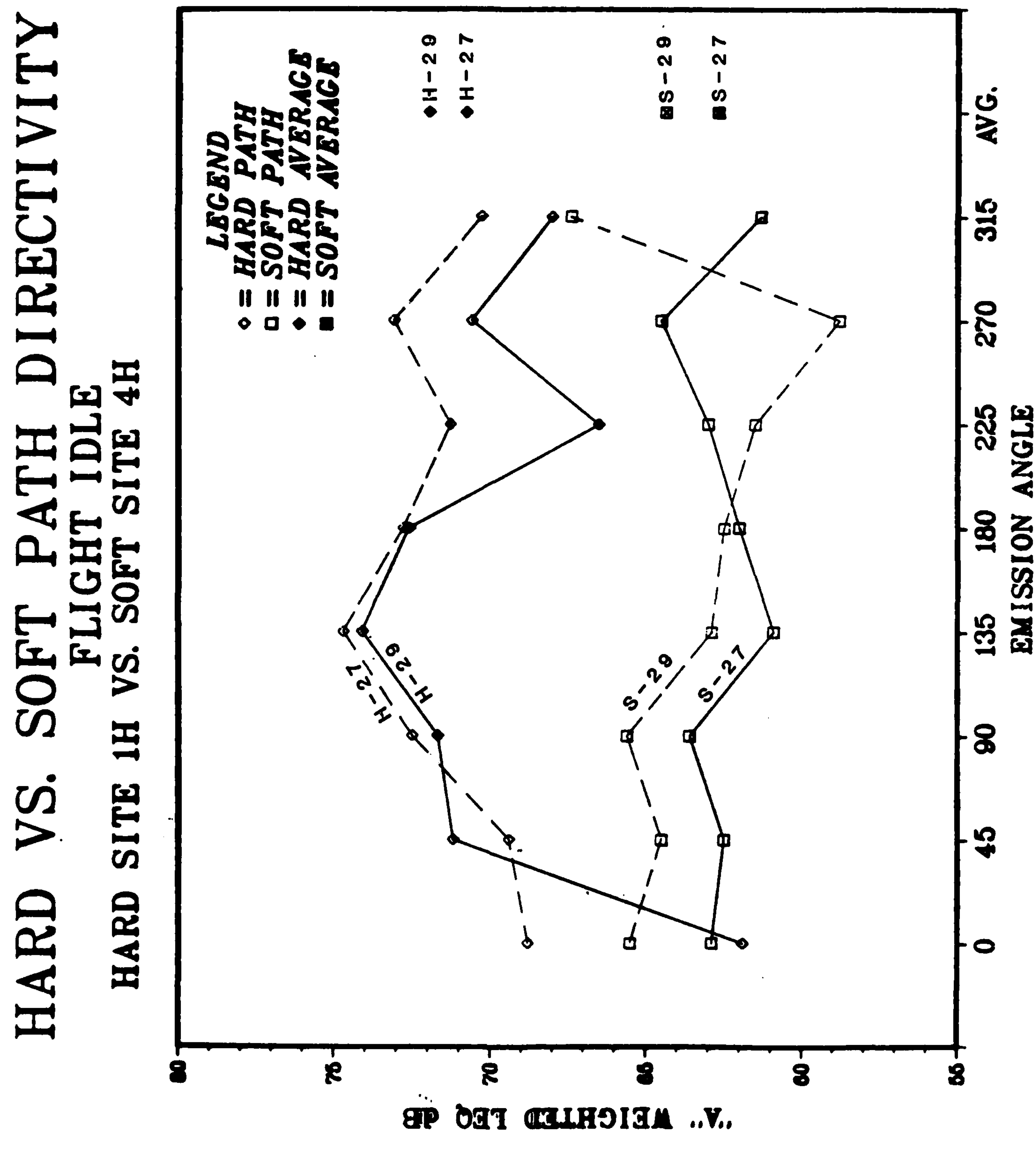
This section provides a summary of ground-to-ground empirical propagation characteristics for the various static operations and the various test days.

The tables provided below summarize spatial average propagation coefficients. Individual emission angle propagation coefficients are shown in the tables of Appendix O.

HARD SITE PROPAGATION CONSTANTS:

	HIGE	FI	GI
August 27........	42	44	32
August 29........	32	33	28

FIGURE 28



HARD VS. SOFT PATH DIRECTIVITY
FLIGHT IDLE
HARD SITE 1H VS. SOFT SITE 4H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
◆H-29
◆H-27
■S-29
■S-27
H-27
H-29
S-29
S-27
80
75
70
65
60
55
"A" WEIGHTED LEQ dB
0
45
90
135
180
225
270
315
AVG.
EMISSION ANGLE

FIGURE 26

HARD VS. SOFT PATII DIRECTIVITY
FLIGHT IDLE
HARD SITE 1H VS. SOFT SITE 4H AUG. 27, 1984

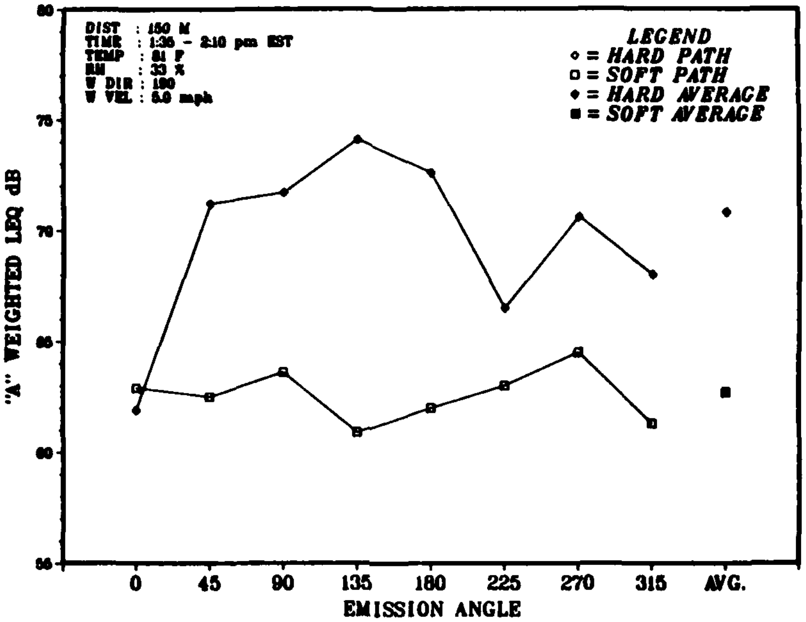
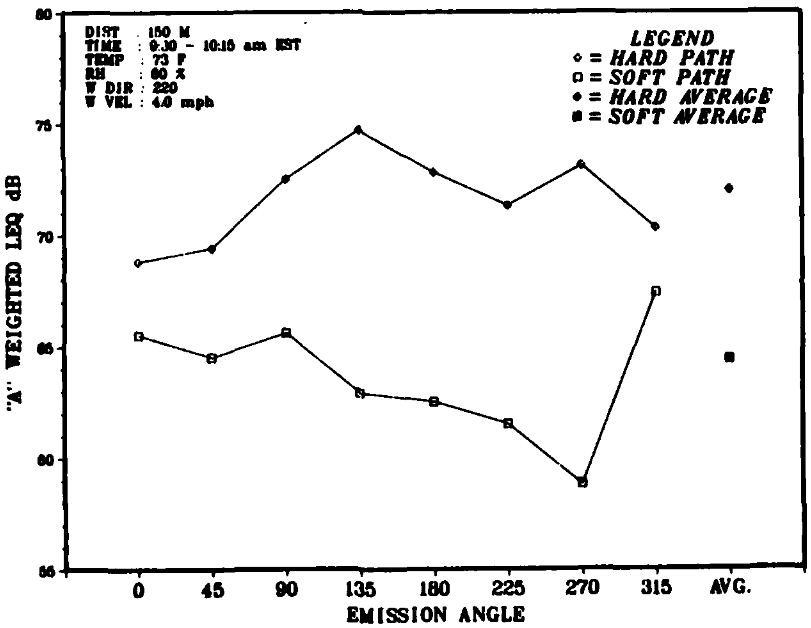


FIGURE 27

HARD VS. SOFT PATH DIRECTIVITY
FLIGHT IDLE
HARD SITE 1H VS. SOFT SITE 4H AUG. 29, 1984



B. Soft Propagation Surface

1. A local maxima occurred on each day at 225 degrees.

2. On the second day of testing the maxima occurred at 315 while on the first day it occurred at 225 degrees.

3. Spatial average values from one day to the next vary only slightly, 67.5 on the 27th and 67.1 on the 29th.

4. A-weighted LEQ values fall in a range for 64 to 70 db on the 27th and 62 to 72 db on the 29th.

5. The dominant spatial average A-weighted acoustical energy is in the 1000 to 1600 Hz region.

6. Soft path directivity patterns are very similar for the two test days.

Flight Idle (FI) Operations

Flight idle data are presented in the tables of Appendix D. Plots showing source directivity for the FI operations conducted August 27 and 29 are shown in Figures 26 and 27. The hard and soft propagation paths for both days are shown on one plot in Figure 28.

A. Hard Propagation Surface

1. A great variation is evident for the noise emission angle from one day to the next.

2. The spatial average levels from one day to the next vary 1.2 dB, with 70.8 on the 27th, and 72.0 of the 29th.

3. A dip in the noise directivity pattern seen at 225 degrees on the first day of testing was not evident on the second day.

4. A-weighted LEQ values fall in the range of 62 to 74 dB on the 27th and 68 to 75 dB on the 29th.

5. The dominant spatial average A-weighted acoustical energy is in the 500 to 1200 Hz region.

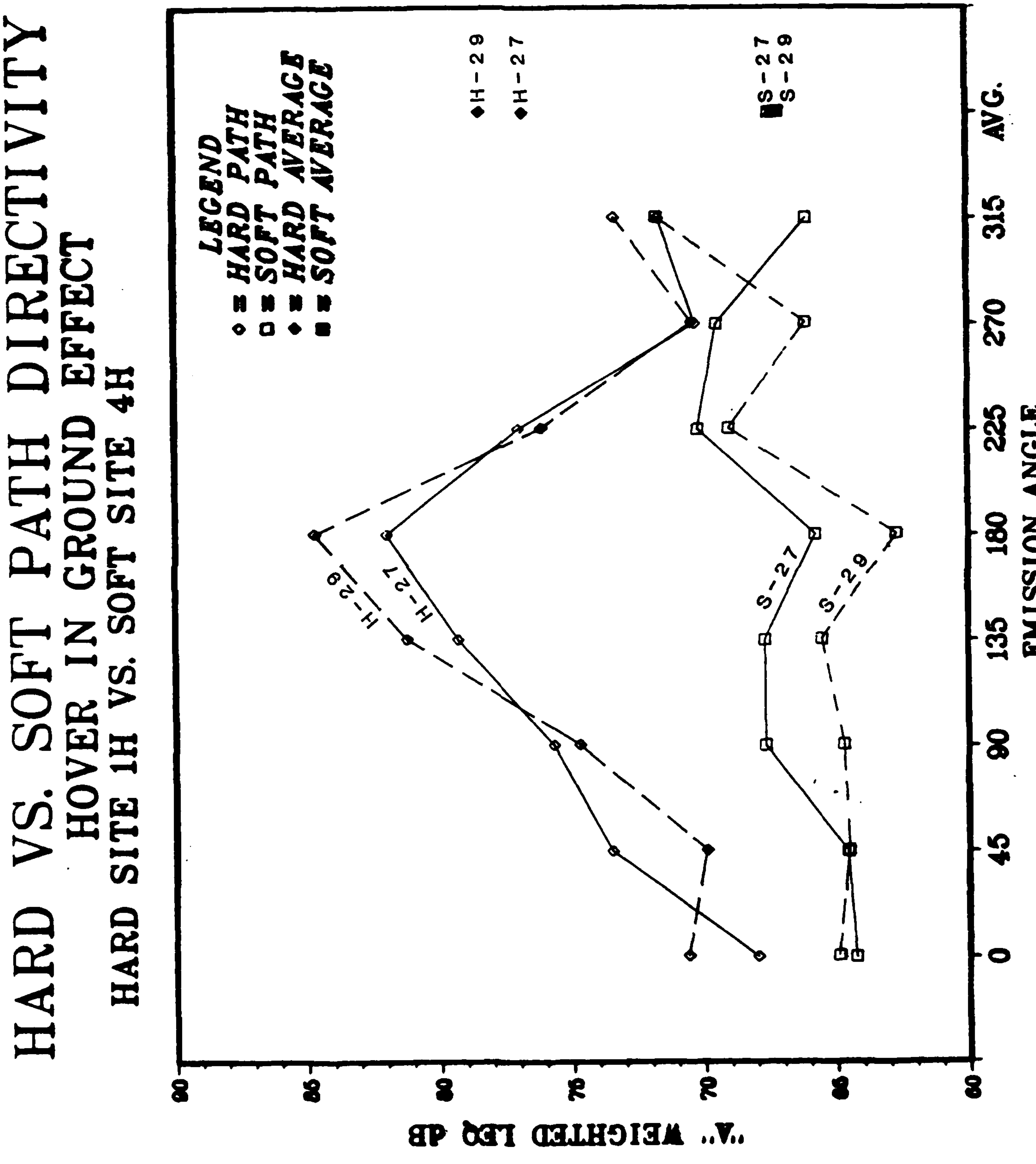
B. Soft Propagation Surface

1. Day-to-day spatial average values are 62.7 on the 27th and 64.4 on the 29th.

2. Large day-to-day variations are evident in the 270 to 315 degree emission angle region.

3. A-weighted LEQ values range from 60 to 65 dB on the 27th, and 58 to 68 dB on the 29th.
4. The dominant spatial average A-weighted acoustical energy is in the 1200 to 2500 Hz region.

FIGURE 25



HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 1H VS. SOFT SITE 4H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
H-29
H-27
S-27
S-29
"A" WEIGHTED LEQ dB
60
65
70
75
80
85
90
0
45
90
135
180
225
270
315
AVG.
EMISSION ANGLE

FIGURE 23

HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 1H VS. SOFT SITE 4H AUG. 27, 1984

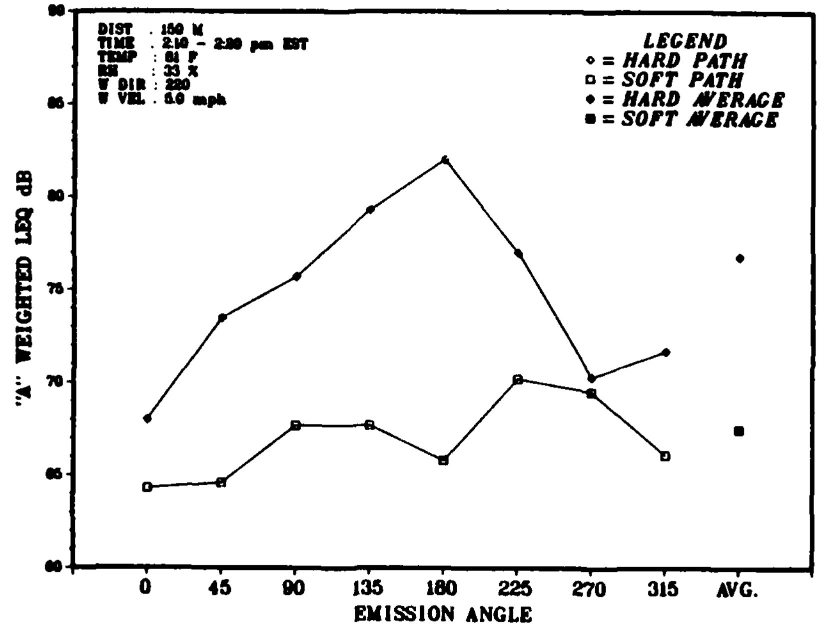


FIGURE 24

HARD VS. SOFT PATH DIRECTIVITY
HOVER IN GROUND EFFECT
HARD SITE 1H VS. SOFT SITE 4H AUG. 29, 1984

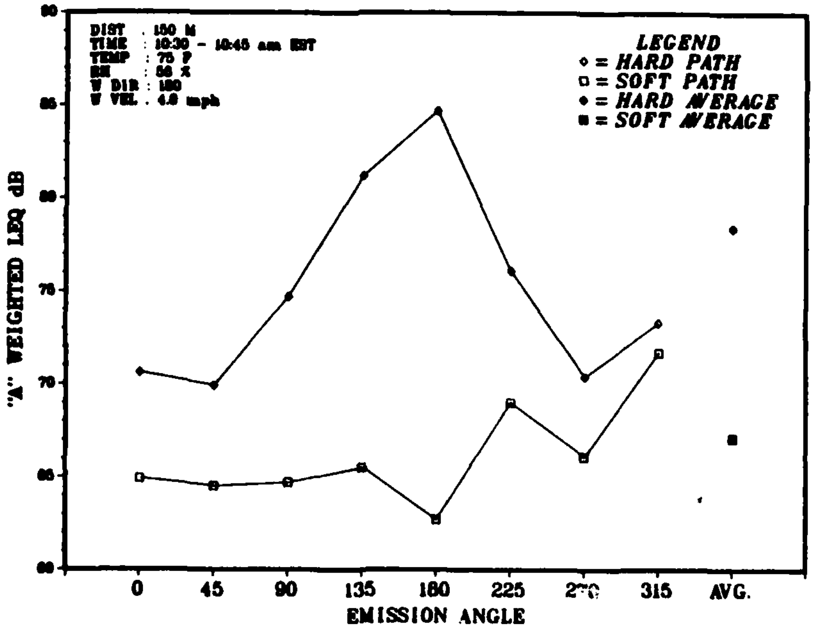


FIGURE 38

HARD VS. SOFT PATH DIRECTIVITY

GROUND IDLE

HARD SITE 5H VS. SOFT SITE 6H AUG. 27, 1984

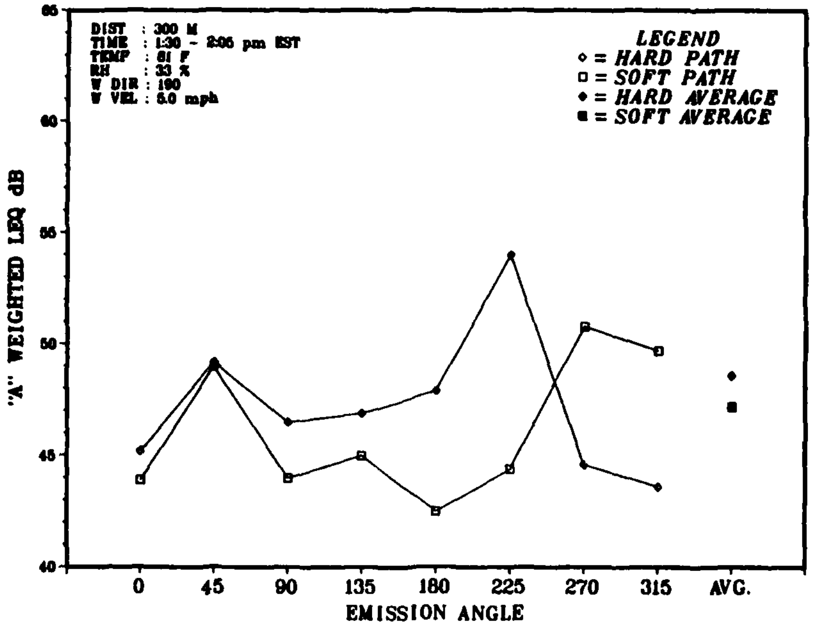


FIGURE 39

HARD VS. SOFT PATH DIRECTIVITY

GROUND IDLE

HARD SITE 5H VS. SOFT SITE 6H AUG. 29, 1984

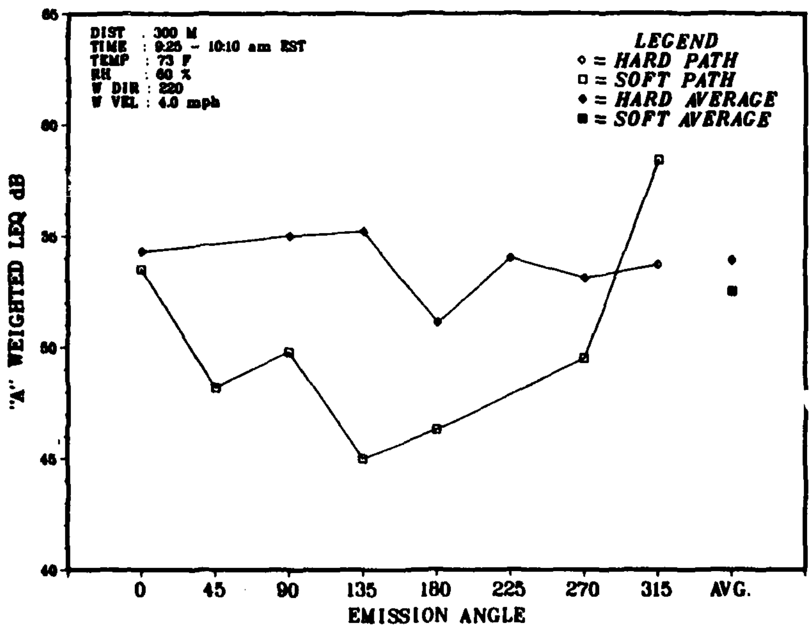
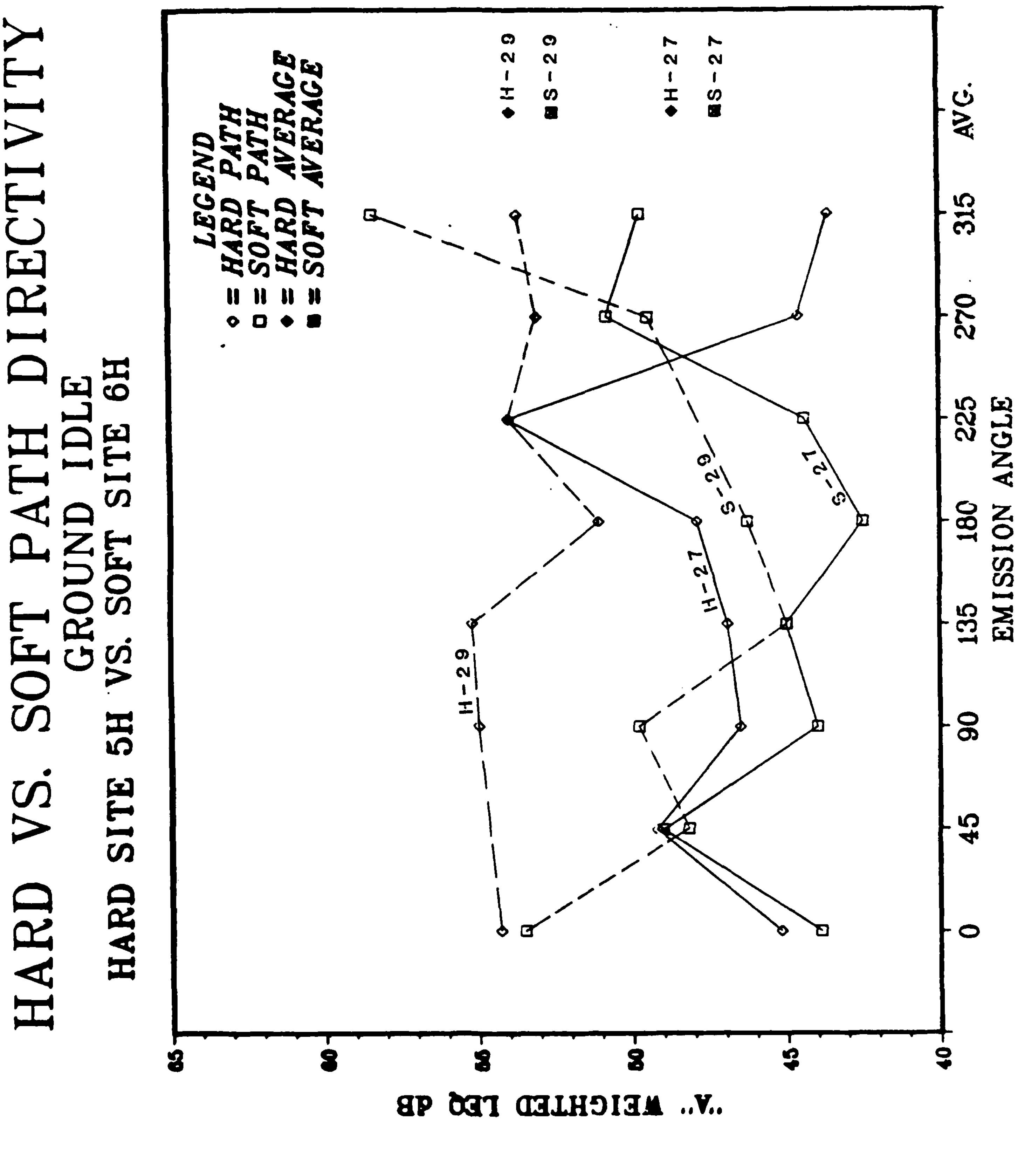


FIGURE 40


HARD VS. SOFT PATH DIRECTIVITY
GROUND IDLE
HARD SITE 5H VS. SOFT SITE 6H
LEGEND
◇ = HARD PATH
□ = SOFT PATH
◆ = HARD AVERAGE
■ = SOFT AVERAGE
◆H-29
■S-29
◆H-27
■S-27
H-29
H-27
S-29
S-27
"A" WEIGHTED LEQ dB
65
60
55
50
45
40
0
45
90
135
180
225
270
315
AVG.
EMISSION ANGLE

8.10 A-Weighted Time History Analysis

Intra-test program comparisons of time history characteristics will assist in evaluating why differences may exist between reported noise levels. Appendix M contains a compendium of A-Weighted time histories acquired using the FAA direct read noise measurement systems. The slow dynamic response, DC output of the Gen Rad 1988 PISLM was input to a Metrosonics dB-4 graphic level recorder (GLR). The GLR transport speed of 300 centimeters per hour results in a time base increment of 12 seconds per cm division. The vertical scale on the GLR strip charts is 5 dB per large division or 1 dB per line.

Qualitative Analysis of the A, B and C, ICAO Certification Test Series

The high speed level flyover time histories are characterized by a jagged, step-like, steep increase in sound level, a sharp peak and a very rapid and smooth decrease in sound level.

The takeoff time histories are in general much more symmetrical in their rise and decay slopes than the level flyover or approach operations. The takeoff operations (in most cases) also have a secondary maximum which occurs on the decay side of the time history.

Approach operations were characterized by very steep onset and decay slopes with some raggedness associated with the onset.

The qualitative characteristics of the time histories will assist in analyzing differences from one test pilot to the next, and from one test day to the next. Time history characteristics will also be useful in investigating test program to test program differences.

8.11 Dominant Spectral Component Analysis

In the event of divergence in intra-program noise levels, an examination of acoustical spectra may provide the insight necessary to explain why differences exist. This section contains a summary of spectral analyses (see Table 18) identifying the dominant three one-third octave band contributers to the Perceived Noise Level, PNL. The dominant bands are displayed for each "as measured" event in the tables of Appendix B. The dominant bands represent "eyeball averages" for the indicated test series. Individual events within a given series may have dominant bands which deviate from these values. Individual event deviations from the series mean values may provide an indication as to why a certain event might have a noise level significantly different from the mean value.

Table 18
Summary of Spectral Analyses

SERIES	OPERATION	BAND NO'S	DOMINANT BAND CENTER FREQUENCY 1ST	2ND	3RD
B	ICAO T/O	22,25,34	160	315	2500
BB	ICAO T/O	22,24,34	160	250	2500
BZ	ICAO T/O	22,25,35	160	315	2500
BY	ICAO T/O	22,34,34	160	2500	2500
C	ICAO APP	24,26,23	250	400	200
CC	ICAO APP	25,24,26	315	250	400
CZ	ICAO APP	25,24,26	315	250	400
CY	ICAO APP	25,24,26	315	250	400
K	NO GUIDE 6	25,24,26	315	250	400
KK	NO GUIDE 6	25,24,23	315	250	200
M	BELL Q APP	24,22,25	250	160	315
MM	BELL Q APP	24,22,25	250	160	315
A	ICAO LFO	23,26,27	200	400	500
AA	ICAO LFO	23,26,27	200	400	500
AZ	ICAO LFO	23,26,27	200	400	500
AY	ICAO LFO	23,26,27	200	400	500
G	300M 117K LFO	22,25,27	160	315	500
H	150M 130K LFO	26,23,34	400	200	2500
I	150M 104K LFO	26,23,25	400	200	315
J	150M 91K LFO	26,23,27	400	200	500

Observations:

The 300 meter level flyover operation indicates a clear shift to lower frequency dominance with the higher frequency components in band 23 subject to greater atmospheric absorption than band 22, leaving dominance at band 22.

In the approach operational scenarios, the guided and unguided approaches exhibit similiar dominant frequencies, while the Bell "Quiet Approach" does show a lower frequency dominance.

8.12 Trajectory Plots and Ground Track Analysis

This section discusses selected plots acquired from the laser tracking system. Plots are shown in Appendix E. In each case plots show the lateral displacement from the reference ground track (x-y plane) as well as the flight profile (x-z plane). The x axis is labeled relative to an origin located at the center, centerline location (microphone site 1). Positive x is easterly (toward site 5) while negative x is westerly (toward site 4). Plots are shown only for takeoff operations. The guided and unguided approach operations showed very little difference and consequently have not been presented.

Laser data are presented as lines representing the best fit to smoothed data. It should also be noted that the plotting software program draws a straight line spanning data drop-out segments. The laser data presented for individual departure operations provide an opportunity to assess the differences in anticipation and rotation during the takeoff operation.

A complete set of laser trajectory plots and tabular data is on file and will be used as necessary in the HNMRP evaluation process.

8.13 Data Reduction System Calibration Test Tape Results

In order to normalize for reduction system differences, test data acquired in the various noise measurement flight test programs within the HNMRP, a series of "calibration tapes" were generated at the U.S. Transportation System Center (TSC) facility. Twelve "identical" tapes were created, each containing three helicopter flyover events along with level and frequency response reference signals. Before dispatching a test tape to each program participant, each of the twelve tapes was reduced using the data reduction system employed by the U.S. in this program. This step allows each participant to compare their results directly with the TSC system, and will permit a full inter-system comparison in the HNMRP evaluation process. The TSC values for each of the twelve tapes are presented below in Table 19.

TABLE 19

ICAO HELICOPTER NOISE MEASUREMENT REPEATABILITY PROGRAM

12 SYSTEM CALIBRATION TAPES

SUMMARY NOISE LEVEL DATA

3/ 5/85

GENRAD 1921 REAL TIME ANALYZER -- TSC-2, 4 - SAMPLE WEIGHTED LOGARITHMIC AVERAGE

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
FLYOVER																	
1-4	83.2	76.6	6.6	6.9	0.5	87.0	89.7	90.5	6.8	79.7	9.0	9.0	1.0	23	35	34	33
2-4	83.0	76.5	6.5	6.8	0.5	86.8	89.5	90.4	6.8	79.5	9.0	9.0	1.1	23	35	34	33
3-4	83.1	76.6	6.5	6.8	0.5	87.0	89.7	90.7	6.5	79.6	9.0	9.0	0.8	22	35	34	33
4-4	83.1	76.6	6.5	6.8	0.5	86.9	89.6	90.6	6.6	79.6	9.0	9.0	0.7	22	35	34	36
5-4	83.0	76.5	6.5	6.8	0.5	86.8	89.4	90.4	6.7	79.6	9.0	9.0	1.1	23	35	34	33
6-4	83.1	76.5	6.6	6.9	0.5	86.9	89.5	90.4	6.8	79.6	9.0	9.0	1.1	23	35	34	33
7-4	83.1	76.6	6.5	6.8	0.5	86.9	89.5	90.4	6.7	79.6	9.0	9.0	1.1	23	35	34	33
8-4	83.1	76.5	6.5	6.8	0.5	86.9	89.5	90.5	6.8	79.6	9.0	9.0	1.1	23	35	34	33
9-4	83.2	76.6	6.5	6.8	0.5	87.0	89.6	90.7	6.6	79.7	9.0	9.0	0.8	22	35	34	33
10-4	83.1	76.6	6.5	6.9	0.5	86.9	89.5	90.4	6.8	79.6	9.0	9.0	1.1	23	35	34	33
11-4	83.0	76.5	6.6	6.9	0.5	86.9	89.4	90.4	6.8	79.6	9.0	9.0	1.1	23	35	34	33
12-4	83.1	76.5	6.6	6.9	0.5	86.9	89.5	90.4	6.8	79.6	9.0	9.0	1.1	23	35	34	33
Avg.	83.1	76.6	6.5	6.8	0.5	86.9	89.5	90.5	6.7	79.6	9.0	9.0	1.0	-	-	-	-
Std Dv	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	-	-	-	-
90% CI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	-	-	-	-
TAKEOFF																	
1-5	84.7	75.5	9.3	6.9	0.4	88.9	88.6	90.2	6.9	80.6	21.5	18.0	1.8	22	35	34	33
2-5	84.6	75.4	9.2	6.9	0.4	88.8	88.6	90.2	6.8	80.4	22.0	18.0	1.8	22	35	34	33
3-5	84.6	75.3	9.3	6.9	0.4	88.7	88.5	90.1	6.9	80.4	22.0	18.0	1.8	22	35	34	33
4-5	84.7	75.6	9.1	6.9	0.4	88.9	88.7	90.3	6.8	80.5	21.0	18.0	1.8	22	35	34	33
5-5	84.6	75.4	9.2	6.9	0.4	88.8	88.6	90.1	6.9	80.4	21.5	18.0	1.8	22	35	34	33
6-5	84.6	75.4	9.2	6.9	0.4	88.8	88.5	90.2	6.9	80.4	21.5	18.0	1.8	22	35	34	33
7-5	84.7	75.4	9.2	6.9	0.4	88.9	88.6	90.3	6.8	80.5	21.5	18.0	1.8	22	35	34	33
8-5	84.6	75.4	9.2	6.9	0.4	88.8	88.6	90.2	6.9	80.4	21.5	18.0	1.8	22	35	34	33
9-5	84.7	75.5	9.2	6.9	0.4	88.9	88.6	90.2	6.9	80.5	21.5	18.0	1.8	22	35	34	33
10-5	84.7	75.5	9.2	6.9	0.4	88.9	88.6	90.3	6.9	80.5	22.0	18.0	1.8	22	35	34	33
11-5	84.6	75.4	9.2	6.9	0.4	88.9	88.7	90.4	6.7	80.4	21.5	18.0	1.5	22	35	34	33
12-5	84.7	75.6	9.2	6.9	0.4	88.9	88.7	90.4	6.8	80.5	21.5	18.0	1.8	22	35	34	33
Avg.	84.6	75.4	9.2	6.9	0.4	88.8	88.6	90.2	6.9	80.5	21.6	18.0	1.7	-	-	-	-
Std Dv	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.1	0.1	0.3	0.0	0.1	-	-	-	-
90% CI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	-	-	-	-
APPROACH																	
1-6	91.0	84.0	7.0	6.1	0.3	94.4	95.8	96.8	6.4	90.0	14.5	15.0	1.0	29	26	24	33
2-6	90.9	84.1	6.8	6.0	0.3	94.1	95.7	96.6	6.4	89.9	14.0	15.0	0.9	29	26	24	33
3-6	91.0	84.1	6.8	6.0	0.3	94.2	95.8	96.7	6.4	90.0	14.0	15.0	0.9	29	26	33	34
4-6	91.0	84.1	6.9	6.0	0.3	94.3	95.9	96.9	6.3	90.1	14.0	15.0	0.9	26	26	34	24
5-6	90.9	84.1	6.8	6.0	0.3	94.2	95.9	96.8	6.3	90.0	14.0	15.0	0.9	26	26	24	33
6-6	90.9	84.0	6.9	6.0	0.4	94.2	95.8	96.8	6.3	90.0	14.0	15.0	1.0	29	26	24	34
7-6	91.0	84.1	6.9	6.0	0.3	94.3	95.9	96.9	6.3	90.0	14.0	15.0	1.0	29	26	24	34
8-6	91.0	84.1	6.9	6.0	0.3	94.3	95.9	96.9	6.3	90.0	14.0	15.0	1.0	29	26	33	24
9-6	91.0	84.1	6.9	6.0	0.3	94.4	95.9	97.0	6.3	90.1	14.0	15.0	1.0	29	26	24	34
10-6	91.1	84.3	6.8	5.9	0.3	94.4	96.1	97.0	6.3	90.1	14.0	15.0	0.9	29	26	33	24
11-6	91.0	84.0	7.0	6.0	0.3	94.2	95.8	96.8	6.3	89.9	14.5	15.0	1.0	29	26	24	33
12-6	91.0	84.1	6.9	6.0	0.4	94.3	95.8	96.7	6.4	90.0	14.0	15.0	0.9	29	26	24	34
Avg.	91.0	84.1	6.9	6.0	0.3	94.3	95.9	96.8	6.3	90.0	14.1	15.0	1.0	-	-	-	-
Std Dv	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.2	0.0	0.1	-	-	-	-
90% CI	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.0	-	-	-	-

8.14 Divergence of Noise Levels Within Individual Test Series

This section provides a look at variance within individual test series for the US/Canadian test program. Detailed evaluation of flyover events with unusually large differences may lead to a better understanding of why differences occur.

This section is intended to identify those events within each test series which have the highest and lowest EPNL values. The decibel difference for the range is also identified. The intent is to focus on widely divergent events. Subsequent analyses in the ICAO HNMRP evaluation process will attempt to identify whether or not the differences are indeed random variation or the result of bias in any of the test environmental or operational conditions.

The analysis results shown in Table 20 indicate that typical range values are on the order of 1.5 to 2.5 dB. However, a number of cases arise where range values are on the order of 3.5 to 4 dB. These are the cases into which detailed investigations will be conducted.

Table 20

HIGHEST / LOWEST EPNL VALUES IN A SERIES
TEST RUN, DELTA, AND STANDARD DEVIATION

SERIES	RIGHT HIGH	/LOW	CENTER HIGH	/LOW	LEFT HIGH	/LOW
A	86.6 A1,2,4 Δ=1.1	85.5 A5 σ=0.39	87.2 A1,A2,A4 Δ=0.9	86.3 A7 σ=0.36	87.9 A4 Δ=0.8	87.1 A5,6 σ=0.28
AZ	86.7 AZ27 Δ=0.7	86 AZ29 σ=0.32	87.9 AZ28 Δ=0.3	87.6 AZ30 σ=0.13	87.8 AZ27,28 Δ=0.3	87.5 AZ29 σ=0.14
AA	86.8 AA8 Δ=1.6	85.2 AA7 σ=0.63	88.2 AA3 Δ=1.1	87.1 AA8 σ=0.43	87.7 AA8 Δ=0.6	87.1 AA6 σ=0.21
AY	88.8 AY19 Δ=3.1	85.7 AY30 σ=1.06	88 AY24 Δ=1.9	86.1 AY19 σ=0.56	89 AY21,23, Δ=1.0	88 AY29 σ=0.40

Table 20 (Continued)

B	87 B33 Δ=1.3	85.7 B43,52 σ=0.48	87.4 B43 Δ=1.3	86.1 B37 σ=0.47	87.5 B39 Δ=1.8	85.7 B43 σ=0.53
BZ	86.5 BZ34 Δ=1.0	85.5 BZ30 σ=0.38	86.7 BZ36 Δ=0.5	86.2 BZ32 σ=0.20	87.7 BZ36 Δ=1.0	86.7 BZ38 σ=0.40
BB	87 BB15,25 Δ=1.3	85.7 BB19 σ=0.44	88.8 BB13 Δ=2.2	86.6 BB19 σ=0.86	88.3 BB13 Δ=1.9	86.4 BB17,19 σ=0.77
BY	87.8 BY3 Δ=.8	87 BY11 σ=0.26	92.4 BY15 Δ=4.1	88.3 BY13 σ=1.45	90.1 BY9 Δ=1.8	88.3 BY13 σ=0.73
C	92.4 C46 Δ=3.5	88.9 C42 σ=1.00	93.7 C40 Δ=3.1	90.6 C48 σ=0.93	88.1 C34 Δ=1.6	86.5 C48 σ=0.62
CZ	91.7 CZ35 Δ=3.3	88.4 CZ39 σ=1.23	93 CZ31,33, Δ=0.9	92.1 CZ39 σ=0.40	87.8 CZ39 Δ=1.9	85.9 CZ37 σ=0.80
CC	92.1 CC10 Δ=3.6	88.5 CC14 σ=1.14	93.5 CC22 Δ=3.1	90.4 CC14,C16 σ=1.29	88.7 CC22 Δ=3.7	85 CC16 σ=1.19
CY	92.6 CY14 Δ=3.5	89.1 CY18 σ=1.11	93.6 CY10 Δ=1.5	92.1 CY2 σ=0.46	87.9 CY16 Δ=1.8	86.1 CY2 σ=0.56
K	92.1 K42 Δ=1.9	90.2 K46 σ=0.80	93.3 K45 Δ=1.0	92.3 K43 σ=0.40	87.9 K46 Δ=1.4	86.5 K41 σ=0.54
KK	91.7 KK57 Δ=2.3	89.4 KK52 σ=0.80	93.4 KK53 Δ=3.5	89.9 KK56 σ=1.42	87.2 KK57 Δ=2.5	84.7 KK56 σ=1.04

References

Reference 1: Test Plan for the ICAO Helicopter Noise Measurement Repeatability Program, November 1983, Revised December 15, 1983.

Reference 2: Helicopter Noise Measurement Repeatability Program Mid-Program Review Advance Phases Protocol, October 1, 1984.

Reference 3: ICAO Annex 16 to the Convention on International Civil Aviation, "Environmental Protection," Vol. I - Aircraft Noise, 1981.

Reference 4: Bell 206L-1 Long Ranger II Flight Manual, Bell Helicopter Textron, May 18, 1978.

Reference 5: ICAO Working Group II Background Information Paper on Agenda Item 3A, Compendium of Comments on Test Plan, May 1984 (presented by the U.S. representative at the WG II meeting in Boston, Massachusetts).

Reference 6: "An Examination of Test to Test Variability for the A109A Helicopter Using ICAO Annex 16 Noise Certification Procedures," ICAO Committee on Aircraft Noise (CAN) Working Group B, joint German, Italian, U.S. member paper, January 1983.

Reference 7: SAE Report AIR-902, Determination of Minimum Distance from Ground Observer to Aircraft for Acoustic Tests. May 15, 1966..

Reference 8: Three-Nation Comparison of the A109, ICAO Committee on Aircraft Noise (CAN), Working Group B, 1981.

Reference 9: Schmitz, F.H. and Y.H. Yu. Helicopter Impulsive Noise: Theoretical and Experimental Status. U.S. Army Aviation Research and Development Command, Ames Research Center, CA. Presented at International Symposium on Recent Advances in Aerodynamics and Aeroacoustics at Stanford University, August 1983.

APPENDIX A

Direct Read Acoustical Data and Duration Time for Flight Operations

This appendix presents direct read data and contains the results of the helicopter noise duration analysis for flight operations on an individual event basis. Further information on direct read data processing is contained in Section 5.1 of this report. Each table within this appendix provides the following information:

Run Number	The test run number.
SEL(dB)	Sound Exposure Level, expressed in decibels.
AL(dB)	A-Weighted Sound Level, expressed in decibels.
T(10-dB)	Event 10 dB down duration time expressed in seconds (acquired from graphic level recorder).
K(A)	Empirical duration constant.
Q	Time history "shape factor."
Average	The average of the column.
N	Sample size.
Std Dev	Standard deviation.
90% C.I.	Ninety percent confidence interval.
Mic Site	The microphone site at which the measurements were taken.

TABLE A.1

HELICOPTER: BELL 206 L-1

TEST DATE: 8-27-84

OPERATION: 492 FT. FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
A-1	85.4	77.8	12.1	7	.5
A-2	86.2	78.9	12.2	6.7	.4
A-3	86.1	76.8	NA	NA	NA
A-4	85	77.3	13.1	6.9	.4
A-5	84.8	77.2	11.9	7.1	.5
A-6	85	77.5	12.1	6.9	.5
A-7	84.7	76.8	11.2	7.5	.6
A-8	84.7	77	12.1	7.1	.5
AVERAGE	85.20	77.40	12.10	7.00	.5
N	8	8	7	7	7
STD.DEV.	0.61	0.69	0.56	.25	.04
90% C.I.	0.41	0.46	0.41	.19	.03

TABLE A.2

HELICOPTER: BELL 206 L-1

TEST DATE: 8-27-84

OPERATION: 492 FT. FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
A-1	85.6	77.7	13.1	7.1	.5
A-2	86.4	79	NA	NA	NA
A-3	86.8	77.9	NA	NA	NA
A-4	85.7	77.6	NA	NA	NA
A-5	85.4	77.6	11.2	7.4	.5
A-6	85.6	77.9	13.1	6.9	.4
A-7	85.1	77.6	11.1	7.2	.5
AVERAGE	85.80	77.90	12.10	7.10	.5
N	7	7	4	4	4
STD.DEV.	0.59	0.50	1.13	.23	.04
90% C.I.	0.43	0.37	1.33	.27	.05

HELICOPTER: BELL 206 L-1 TABLE A.3

TEST DATE: 8-27-84

OPERATION: 492 FT. FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
A-1	85.1	71.5	12.1	12.6	1.9
A-2	86	72.4	12.1	12.6	1.9
A-3	86	71.6	13	12.9	2.1
A-4	85.8	71.2	12.3	13.4	2.3
A-5	84.8	70.7	13	12.7	2
A-6	85.5	72.5	11	12.5	1.8
A-7	85.1	72.8	11.5	11.6	1.5
A-8	85.1	71.9	13.3	11.7	1.6
AVERAGE	85.40	71.80	12.30	12.50	1.9
N	8	8	8	8	8
STD.DEV.	0.47	0.71	0.79	.59	.28
90% C.I.	0.31	0.48	0.53	.39	.19

HELICOPTER: BELL 206 L-1 TABLE A.4

TEST DATE: 8-28-84

OPERATION: 492 FT. 150 M FLYOVER
(0.9*VH)/TARGET IAS=117 KTS

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AA-1	85.3	77.9	13.3	6.6	.4
AA-2	85.4	77.8	11.5	7.2	.5
AA-3	85.7	78.2	NA	NA	NA
AA-4	85.3	77.6	NA	NA	NA
AA-5	85.2	77.8	11.2	7.1	.5
AA-6	85.1	77.1	12.1	7.4	.5
AA-7	84.6	77.2	13.6	6.5	.4
AA-8	85.3	77.5	11.3	7.4	.5
AVERAGE	85.20	77.60	12.20	7.00	.5
N	8	8	6	6	6
STD.DEV.	0.31	0.37	1.05	.38	.06
90% C.I.	0.21	0.25	0.86	.32	.05

HELICOPTER: BELL 206 L-1 TABLE A.5

TEST DATE: 8-28-84

OPERATION: 492 FT. 150 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AA-1	85.7	78.5	11.7	6.7	.4
AA-2	NA	76	13.3	NA	NA
AA-3	86.7	78.1	13.1	7.7	.6
AA-4	85.1	77.7	11.8	6.9	.5
AA-5	84.8	77	12.5	7.1	.5
AA-6	85.5	78.2	11.5	6.9	.5
AA-7	84.9	77.2	12.1	7.1	.5
AA-8	85.2	78	NA	NA	NA
AVERAGE	85.40	77.60	12.30	7.10	.5
N	7	8	7	6	6
STD.DEV.	0.65	0.82	0.70	.34	.04
90% C.I.	0.48	0.55	0.52	.28	.03

HELICOPTER: BELL 206 L-1 TABLE A.6

TEST DATE: 8-28-84

OPERATION: 492 FT. 150 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 2 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AA-1	86	78.2	NA	NA	NA
AA-2	85.7	78	11.3	7.3	.5
AA-3	NA	77.2	13.3	NA	NA
AA-4	85.5	78.4	NA	NA	NA
AA-5	85.5	77.3	NA	NA	NA
AA-6	84.8	77.2	11.9	7.1	.5
AA-7	85.3	77.3	NA	NA	NA
AVERAGE	85.50	77.70	12.20	7.20	.5
N	6	7	3	2	2
STD.DEV.	0.40	0.52	1.03	.17	.03
90% C.I.	0.33	0.38	1.73	.78	.12

HELICOPTER: BELL 206 L-1 TABLE A.7

TEST DATE: 8-28-84

OPERATION: 492 FT. 150 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AZ-26	85	77	11.6	7.5	.5
AZ-27	84.1	76.9	11.1	6.9	.5
AZ-28	84.1	76.9	11.2	6.9	.5
AZ-29	83.8	75.8	13.5	7.1	.5
AZ-30	82.9	74.5	12.2	7.7	.6
AVERAGE	84.00	76.20	11.90	7.20	.5
N	5	5	5	5	5
STD.DEV.	0.75	1.08	0.98	.39	.05
90% C.I.	0.72	1.03	0.94	.37	.05

HELICOPTER: BELL 206 L-1 TABLE A.8

TEST DATE: 8-28-84

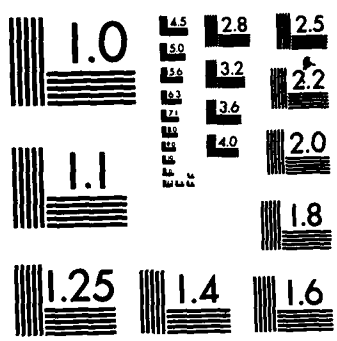
OPERATION: 492 FT. 150 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AZ-26	84.8	76.6	11 1	7.8	.6
AZ-27	84	76.5	12.4	6.9	.5
AZ-28	83.9	76.3	11.1	7.3	.5
AZ-29	84.1	76.9	12.1	6.6	.4
AZ-30	83.5	75.6	13	7.1	.5
AVERAGE	84.10	76.40	11.90	7.10	.5
N	5	5	5	5	5
STD.DEV.	0.47	0.49	0.83	.46	.06
90% C.I.	0.45	0.46	0.79	.44	.06

AD-A159 898 INTERNATIONAL CIVIL AVIATION ORGANIZATION HELICOPTER NOISE MEASUREMENT RE (U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR 2/5

UNCLASSIFIED J S NEWMAN ET AL SEP 85 FAA/EE-85-6 F/G 14/2 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE A.9

HELICOPTER: BELL 206 L-1

TEST DATE: 8-28-84

OPERATION: 492 FT. 150 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AZ-26	84.6	76.5	14.5	7	.5
AZ-27	83.9	75.8	14.7	6.9	.4
AZ-28	84.1	76.4	12.7	7	.5
AZ-29	83.9	76.1	13.3	6.9	.5
AZ-30	83.3	75.6	13.3	6.9	.4
AVERAGE	84.00	76.10	13.70	6.90	.4
N	5	5	5	5	5
STD.DEV.	0.47	0.38	0.86	.05	.01
90% C.I.	0.45	0.37	0.82	.05	.01

TABLE A.10

HELICOPTER: BELL 206 L-1

TEST DATE: 8-29-84

OPERATION: 492 FT. 150M FLYOVER (0.9(VH)/TARGET IAS=117

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AY-19	85.4	NA	NA	NA	NA
AY-20	85.8	78.5	NA	NA	NA
AY-21	86	NA	NA	NA	NA
AY-22	85.3	77.4	NA	NA	NA
AY-23	84.7	76.7	NA	NA	NA
AY-24	85.1	79	NA	NA	NA
AY-25	85.2	77	NA	NA	NA
AY-26	84.6	76.2	NA	NA	NA
AY-27	NA	NA	NA	NA	NA
AY-28	83.9	76	NA	NA	NA
AY-29	84	75.9	NA	NA	NA
AY-30	84.1	76.3	NA	NA	NA
AVERAGE	84.90	77.00			
N	11	9			
STD.DEV.	0.72	1.11			
90% C.I.	0.39	0.69			

TABLE A.11

HELICOPTER: BELL 206 L-1

TEST DATE: 8-29-84

OPERATION: 492 FT. 150M FLYOVER (0.9(VH)/TARGET IAS=117

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
AY-19	NA	NA	13.3	NA	NA
AY-20	NA	NA	8.4	NA	NA
AY-21	NA	NA	10.4	NA	NA
AY-22	NA	NA	12	NA	NA
AY-23	NA	NA	12	NA	NA
AY-24	NA	NA	13.4	NA	NA
AY-25	NA	NA	14	NA	NA
AY-26	NA	NA	16.2	NA	NA
AY-27	NA	NA	13.3	NA	NA
AY-28	NA	NA	17.1	NA	NA
AY-29	NA	NA	13.3	NA	NA
AY-30	NA	NA	15.2	NA	NA
AVERAGE			13.20		
N			12		
STD.DEV.			2.39		
90% C.I.			1.24		

HELICOPTER: BELL 206 L-1 TABLE A.12

TEST DATE: 8-27-84

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
B-33	83.2	74.1	NA	NA	NA
B-35	82.7	72.0	NA	NA	NA
B-37	84.0	73.7	26.0	7.3	.4
B-39	83.0	71.9	NA	NA	NA
B-41	83.8	73.3	26.5	7.4	.4
B-43	83.2	72.4	NA	NA	NA
B-45	83.4	74.0	26.4	6.6	.3
B-47	83.3	72.7	22.9	7.8	.5
B-49	83.6	73.3	24.5	7.4	.4
B-51	NA	72.7	24.7	NA	NA
B-52	82.9	72.8	22.9	7.4	.5
AVERAGE	83.3	73	24.8	7.32	.42
N	10	11	7	6	6
STD.DEV.	.4	.75	1.54	.39	.08
90% C.I.	.23	.41	1.13	.32	.07

HELICOPTER: BELL 206 L-1 TABLE A.13

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
KK-52	90.8	83	12.4	7.1	.5
KK-53	92.6	84.3	14.9	7.1	.5
KK-54	90.4	83.1	12.3	6.7	.4
KK-55	90.3	82.3	13.5	7.1	.5
KK-56	NA	81.8	12.5	NA	NA
KK-57	92.2	84.1	NA	NA	NA
KK-58	NA	NA	NA	NA	NA
AVERAGE	91.30	83.10	13.10	7.00	.5
N	5	6	5	4	4
STD.DEV.	1.07	0.98	1.11	.2	.02
90% C.I.	1.02	0.80	1.05	.24	.02

HELICOPTER: BELL 206 L-1 TABLE A.14

TEST DATE: 8-27-84

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
B-33	86.6	78.4	15.5	6.9	.4
B-35	86.6	78.6	15.9	6.7	.4
B-37	86.7	78.4	14.6	7.1	.5
B-39	86.2	77.7	NA	NA	NA
B-41	87.2	79.7	NA	NA	NA
B-43	86.2	78.0	14.6	7	.5
B-45	86.3	78.2	13.6	7.1	.5
B-47	87.4	79.3	13.9	7.1	.5
B-49	87.0	80.0	13.5	6.2	.4
B-51	85.8	77.6	15.5	6.9	.4
B-52	86.5	78.8	14.3	6.7	.4
AVERAGE	86.6	78.6	14.6	6.86	.4
N	11	11	9	9	9
STD.DEV.	.47	.78	.87	.29	.05
90% C.I.	.26	.43	.54	.18	.03

HELICOPTER: BELL 206 L-1 TABLE A.15

TEST DATE: 8-27-84

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
B-33	84.6	75.0	17.6	7.7	.5
B-35	NA	NA	NA	NA	NA
B-37	84.8	75.0	19.9	7.5	.5
B-39	84.0	74.6	19.3	7.3	.5
B-41	85.0	75.7	18.0	7.4	.5
B-43	82.8	74.6	NA	NA	NA
B-45	84.9	75.3	NA	NA	NA
B-47	84.7	75.3	19.2	7.3	.5
B-49	84.4	74.8	16.9	7.8	.5
B-51	84.1	74.9	19.3	7.2	.4
B-52	83.8	74.8	NA	NA	NA
AVERAGE	84.3	75	18.6	7.46	.49
N	10	10	7	7	7
STD.DEV.	.67	.35	1.1	.22	.04
90% C.I.	.39	.2	.81	.16	.03

HELICOPTER: BELL 206 L-1 TABLE A.16

TEST DATE: 8-28-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BB-11	86.7	78	14.3	7.5	.5
BB-13	NA	NA	14.5	NA	NA
BB-15	85.3	76	13.9	8.1	.6
BB-17	87.6	NA	14.3	NA	NA
BB-19	85.8	77.2	15.9	7.2	.5
BB-21	86.7	78.3	14.8	7.2	.5
AVERAGE	86.40	77.40	14.60	7.50	.5
N	5	4	6	4	4
STD.DEV.	0.89	1.03	0.69	.46	.07
90% C.I.	0.85	1.21	0.57	.54	.08

HELICOPTER: BELL 206 L-1 TABLE A.17

TEST DATE: 8-28-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BB-11	86.6	NA	NA	NA	NA
BB-13	87	NA	18.7	NA	NA
BB-15	84.4	74	NA	NA	NA
BB-17	86.1	76.5	19.4	7.5	.5
BB-19	84.7	75.6	19.3	7.1	.4
BB-21	84.9	74.6	19.2	8	.6
AVERAGE	85.60	75.20	19.20	7.50	.5
N	6	4	4	3	3
STD.DEV.	1.09	1.10	0.31	.48	.07
90% C.I.	0.90	1.30	0.37	.8	.12

HELICOPTER: BELL 206 L-1 TABLE A.18

TEST DATE: 8-28-04

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BZ-32	83.5	74	18.1	7.6	.5
BZ-34	84.4	74.7	22.2	7.2	.4
BZ-36	84	73.9	21.4	7.6	.5
BZ-38	83.9	NA	19.3	NA	NA
BZ-40	NA	NA	NA	NA	NA
AVERAGE	84.00	74.20	20.30	7.40	.5
N	4	3	4	3	3
STD.DEV.	0.37	0.44	1.88	.21	.04
90% C.I.	0.44	0.73	2.22	.36	.06

HELICOPTER: BELL 206 L-1 TABLE A.19

TEST DATE: 8-28-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BB-11	86.4	NA	NA	NA	NA
BB-13	86.1	76.5	24.7	6.9	.4
BB-15	84.2	73.7	26.5	7.4	.4
BB-17	85.2	75.1	21.7	7.6	.5
BB-19	84.1	73.9	24.1	7.4	.4
BB-21	84.6	73.7	26.6	7.6	.5
AVERAGE	85.10	74.60	24.70	7.40	.4
N	6	5	5	5	5
STD.DEV.	0.98	1.22	2.01	.29	.04
90% C.I.	0.80	1.16	1.92	.28	.04

HELICOPTER: BELL 206 L-1 TABLE A.20

TEST DATE: 8-28-04

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BZ-32	NA	72.1	27.8	NA	NA
BZ-34	83.1	73	26.4	7.1	.4
BZ-36	82.8	72.4	26.5	7.3	.4
BZ-38	83.1	72.5	28.8	7.3	.4
BZ-40	NA	71.7	25.7	NA	NA
AVERAGE	83.00	72.30	27.00	7.20	.4
N	3	5	5	3	3
STD.DEV.	0.17	0.48	1.24	.11	.0
90% C.I.	0.29	0.46	1.18	.18	.02

HELICOPTER: BELL 206 L-1 TABLE A.21

TEST DATE: 8-28-04

OPERATION: ICAO TAKEOFF

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BZ-32	85.6	77.5	14.6	7	.4
BZ-34	86.1	78.6	13.5	6.6	.4
BZ-36	86.2	77.8	15.1	7.1	.5
BZ-38	85.2	76.2	16	7.5	.5
BZ-40	84.7	76.4	13.9	7.3	.5
AVERAGE	85.60	77.30	14.60	7.10	.5
N	5	5	5	5	5
STD.DEV.	0.63	1.00	0.99	.32	.03
90% C.I.	0.60	0.95	0.94	.3	.03

HELICOPTER: BELL 206 L-1 TABLE A.22

TEST DATE: 8-29-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BY-7	NA	NA	14.8	NA	NA
BY-9	NA	NA	12.8	NA	NA
BY-11	NA	NA	13.7	NA	NA
BY-13	NA	NA	15.3	NA	NA
BY-15	NA	NA	16	NA	NA
BY-17	NA	NA	NA	NA	NA
AVERAGE			14.50		
N			5		
STD.DEV.			1.28		
90% C.I.			1.22		

HELICOPTER: BELL 206 L-1 TABLE A.23

TEST DATE: 8-29-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BY-7	86.5	77.3	16.8	7.5	.5
BY-9	86.9	77.9	16.9	7.3	.5
BY-11	86.3	77.3	16.2	7.4	.5
BY-13	85.9	76.4	NA	NA	NA
BY-15	86.6	77.1	NA	NA	NA
BY-17	86.9	76.5	NA	NA	NA
AVERAGE	86.50	77.10	16.60	7.40	.5
N	6	6	3	3	3
STD.DEV.	0.38	0.56	0.38	.09	.0
90% C.I.	0.31	0.46	0.64	.15	.02

HELICOPTER: BELL 206 L-1 TABLE A.24

TEST DATE: 8-27-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
C-32	NA	79.9	16	NA	NA
C-34	90.9	82.5	16.9	6.8	.4
C-36	91.9	84.2	NA	NA	NA
C-38	91.7	83.4	17	6.7	.4
C-40	88.6	NA	NA	NA	NA
C-42	91.4	83.6	NA	NA	NA
C-44	91.7	82.2	NA	NA	NA
C-46	90.8	82.9	13.7	6.9	.5
C-48	89.9	83.2	NA	NA	NA
C-50	89.9	81.3	17.2	7	.4
AVERAGE	90.80	82.60	16.20	6.85	.43
N	9	9	5	4	4
STD.DEV.	1.10	1.31	1.45	.13	.05
90% C.I.	0.68	0.81	1.38	.15	.06

HELICOPTER: BELL 206 L-1 TABLE A.25

TEST DATE: 8-29-84

OPERATION: ICAO TAKEOFF

PILOT: 2 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
BY-7	NA	NA	NA	NA	NA
BY-9	NA	NA	NA	NA	NA
BY-11	NA	NA	NA	NA	NA
BY-13	NA	NA	NA	NA	NA
BY-15	NA	NA	NA	NA	NA
BY-17	NA	NA	NA	NA	NA
AVERAGE					
N					
STD.DEV.					
90% C.I.					

HELICOPTER: BELL 206 L-1 TABLE A.26

TEST DATE: 8-27-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
C-32	89.7	80.9	17	7.2	.5
C-34	90	80	22.9	7.4	.4
C-36	88.4	80.7	NA	NA	NA
C-38	88.8	79.6	17.1	7.5	.5
C-40	90.2	81.5	21.7	6.5	.3
C-42	89.3	NA	NA	NA	NA
C-44	NA	81.1	20.2	NA	NA
C-46	87.7	78.2	NA	NA	NA
C-48	NA	NA	NA	NA	NA
C-50	89.2	80	20.5	7	.4
AVERAGE	89.20	80.30	19.90	7.12	.42
N	8	8	6	5	5
STD.DEV.	0.84	1.05	2.41	.4	.08
90% C.I.	0.56	0.70	1.98	.38	.08

HELICOPTER: BELL 206 L-1 TABLE A.27

TEST DATE: 8-27-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
C-32	87.9	80.7	NA	NA	NA
C-34	90.5	82.4	15.7	6.8	.4
C-36	90	81.8	14.5	7.1	.5
C-38	90.7	81.5	NA	NA	NA
C-40	91.5	NA	12.5	NA	NA
C-42	90.7	84.5	15.4	5.2	.3
C-44	91.2	82.1	NA	NA	NA
C-46	89.9	82.2	12.2	7.1	.5
C-48	NA	NA	18.2	NA	NA
C-50	89.2	NA	18.1	NA	NA
AVERAGE	90.20	82.20	15.20	6.50	.4
N	9	7	7	4	4
STD.DEV.	1.10	1.17	2.40	.89	.09
90% C.I.	0.68	0.86	1.76	1.04	.11

HELICOPTER: BELL 206 L-1 TABLE A.28

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CC-10	90.5	82	13.5	7.5	.5
CC-12	90.2	83.4	11.5	6.4	.4
CC-14	88.2	81.6	11.3	6.3	.4
CC-16	89	82	12.7	6.3	.4
CC-18	NA	NA	12.1	NA	NA
CC-20	90	81.5	13.3	7.6	.5
CC-22	91.1	84	NA	NA	NA
CC-24	90.1	81.7	13.4	7.5	.5
AVERAGE	89.90	82.30	12.50	6.90	.5
N	7	7	7	6	6
STD.DEV.	0.97	0.98	0.92	.64	.07
90% C.I.	0.71	0.72	0.68	.53	.05

HELICOPTER: BELL 206 L-1 TABLE A.29

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CC-10	91	82.9	14.7	6.9	.4
CC-12	90.5	83.1	NA	NA	NA
CC-14	NA	80.7	14.3	NA	NA
CC-16	90.3	83.2	13.9	6.2	.4
CC-18	NA	NA	13	NA	NA
CC-20	91.7	83.2	13.3	7.6	.5
CC-22	89.9	82.6	14.9	6.2	.4
CC-24	91.6	83.2	14.3	7.3	.5
AVERAGE	90.80	82.70	14.10	6.80	.4
N	6	7	7	5	5
STD.DEV.	0.73	0.91	0.70	.61	.07
90% C.I.	0.60	0.67	0.52	.58	.07

HELICOPTER: BELL 206 L-1 TABLE A.30

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CZ-31	91.2	82.7	NA	NA	NA
CZ-33	90.4	83.4	NA	NA	NA
CZ-35	91.1	83.7	13.1	6.6	.4
CZ-37	88.9	NA	NA	NA	NA
CZ-39	NA	NA	14.7	NA	NA
AVERAGE	90.40	83.30	13.90	6.60	.4
N	4	3	2	1	1
STD.DEV.	1.06	0.51	1.13		
90% C.I.	1.25	0.87	5.05		

HELICOPTER: BELL 206 L-1 TABLE A.31

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CC-10	88.5	80.2	15.7	6.9	.4
CC-12	87.7	NA	18.6	NA	NA
CC-14	NA	NA	NA	NA	NA
CC-16	88.6	80.1	15.7	7.1	.5
CC-18	NA	NA	NA	NA	NA
CC-20	89.3	80.8	NA	NA	NA
CC-22	NA	82.6	18.1	NA	NA
CC-24	89.8	81.4	18.1	6.7	.4
AVERAGE	88.80	81.00	17.20	6.90	.4
N	5	5	5	3	3
STD.DEV.	0.80	1.03	1.42	.22	.04
90% C.I.	0.77	0.98	1.35	.36	.06

Table B.3

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/18/85

SITE: 16   CENTERLINE-CENTER (FLUSH)   AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	90.9	83.8	7.1	6.1	0.4	-	95.6	96.1	-	92.6	14.5	-	0.5	19	25	24	26
C34	93.3	85.4	8.0	6.4	0.3	95.7	96.4	97.1	6.9	92.9	18.0	17.5	0.7	18	24	25	23
C36	92.3	84.4	7.9	6.9	0.4	94.7	96.3	96.7	6.9	93.3	14.5	14.0	0.5	24	24	25	23
C38	93.0	84.0	9.1	7.1	0.4	95.1	95.1	95.6	7.4	92.8	19.0	19.0	0.5	25	25	26	24
C40	93.9	87.1	6.8	6.1	0.4	95.8	97.9	98.3	6.5	93.6	13.0	14.5	0.4	18	25	24	27
C42	93.2	86.6	6.7	5.6	0.3	95.5	97.2	97.2	6.7	93.5	15.5	17.5	-	27	25	24	27
C44	93.2	84.5	8.7	6.9	0.4	95.2	95.4	95.7	7.3	93.7	18.5	20.0	0.4	28	24	25	26
C46	92.5	84.8	7.7	6.9	0.5	95.0	96.1	96.6	7.3	93.1	13.0	14.0	0.7	27	24	25	27
C48	90.0	80.8	9.2	7.0	0.4	92.8	93.3	93.9	7.2	91.5	20.0	17.5	0.4	19	24	25	26
C50	92.0	83.2	8.8	7.1	0.4	94.4	95.3	95.7	7.2	92.4	17.5	16.0	0.6	19	24	25	23
Avg.	92.4	84.4	8.0	6.6	0.4	94.9	95.9	96.3	7.0	92.9	16.3	16.7	0.5	-	-	-	-
Std Dv	1.2	1.8	0.9	0.5	0.0	0.9	1.3	1.2	0.3	0.7	2.6	2.2	0.2	-	-	-	-
90% CI	0.7	1.0	0.5	0.3	0.0	0.6	0.7	0.7	0.2	0.4	1.5	1.4	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	87.1	77.3	9.3	7.5	0.5	90.9	90.6	92.2	7.2	85.6	17.5	15.5	2.4	19	24	25	22
B37	87.1	77.4	9.7	7.4	0.5	91.3	90.7	92.6	7.5	86.0	20.0	15.5	1.9	19	24	25	32
B39	86.1	77.2	9.0	7.0	0.4	90.8	90.6	92.6	6.9	85.1	19.0	15.5	2.0	19	24	32	34
B41	87.1	77.7	9.4	7.1	0.4	90.8	90.4	92.4	7.0	85.5	21.0	15.5	2.5	19	22	25	26
B43	86.7	76.8	9.9	7.2	0.4	91.0	90.1	92.3	7.4	85.8	23.5	15.5	2.3	19	24	25	26
B45	87.3	77.3	9.9	7.3	0.4	91.4	90.5	92.5	7.1	85.3	23.0	17.5	2.1	19	24	25	26
B47	87.0	77.4	9.6	7.5	0.5	91.3	90.6	92.8	7.1	86.1	19.5	15.5	2.2	22	22	24	25
B49	87.0	77.4	9.6	7.6	0.5	91.1	90.4	93.0	7.0	85.9	18.0	14.5	2.7	19	22	24	25
B52	86.3	76.9	9.4	7.3	0.4	90.4	89.9	91.8	7.3	85.3	19.5	15.0	2.2	22	22	25	24
Avg.	86.8	77.3	9.5	7.3	0.4	91.0	90.4	92.5	7.2	85.6	20.1	15.6	2.2	-	-	-	-
Std Dv	0.4	0.3	0.3	0.2	0.0	0.3	0.3	0.3	0.2	0.4	2.1	0.8	0.3	-	-	-	-
90% CI	0.2	0.2	0.2	0.1	0.0	0.2	0.2	0.2	0.1	0.2	1.3	0.5	0.2	-	-	-	-
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
G9	83.5	74.8	8.8	6.6	0.4	86.6	86.3	87.6	7.0	82.3	21.0	19.5	1.3	20	26	24	27
G10	83.6	73.8	9.8	6.5	0.3	86.6	85.7	87.2	6.3	81.6	32.5	31.5	1.4	20	26	23	25
G11	83.1	74.5	8.7	6.7	0.4	86.3	86.0	87.4	6.9	82.6	20.0	19.5	1.5	20	26	24	23
G13	83.2	73.4	9.8	7.4	0.5	86.3	85.3	86.7	7.5	81.9	21.0	19.5	1.4	20	26	23	24
G14	83.2	73.5	9.8	7.1	0.4	86.4	85.4	87.0	6.8	81.6	24.0	24.0	1.6	20	26	23	24
G15	83.1	73.1	10.0	7.4	0.4	85.9	85.0	86.3	7.4	81.6	23.0	20.0	1.4	20	26	23	24
G16	82.5	73.5	9.0	6.6	0.3	85.8	85.2	86.6	6.8	81.9	23.0	22.5	1.4	20	26	23	25
Avg.	83.2	73.8	9.4	6.9	0.4	86.3	85.5	87.0	7.0	81.9	23.5	22.4	1.4	-	-	-	-
Std Dv	0.4	0.6	0.6	0.4	0.1	0.3	0.5	0.5	0.4	0.4	4.2	4.4	0.1	-	-	-	-
90% CI	0.3	0.4	0.4	0.3	0.0	0.2	0.3	0.4	0.3	0.3	3.1	3.2	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.2

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 1 CENTERLINE - CENTER AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh																	
H17	84.2	77.1	7.0	6.9	0.5	87.9	89.5	90.8	6.7	85.3	10.5	11.5	1.2	22	26	23	34
H18	84.6	78.2	6.5	5.9	0.4	88.3	90.4	91.6	6.1	86.3	12.5	12.5	1.1	23	26	23	34
H19	84.3	76.7	7.6	7.0	0.5	87.7	89.3	90.6	6.9	85.2	12.0	11.0	1.1	22	26	23	22
H20	84.0	77.5	6.5	6.5	0.4	87.6	89.7	90.9	6.4	85.9	10.0	11.5	1.2	23	26	23	34
H21	84.2	77.3	6.9	6.7	0.4	87.7	89.5	90.8	6.6	85.2	11.0	11.0	1.2	22	26	23	34
Avg.	84.3	77.4	6.9	6.6	0.4	87.8	89.7	90.9	6.5	85.6	11.2	11.5	1.2	-	-	-	-
Std Dv	0.2	0.5	0.5	0.4	0.1	0.3	0.4	0.4	0.3	0.5	1.0	0.6	0.0	-	-	-	-
90% CI	0.2	0.5	0.4	0.4	0.0	0.3	0.4	0.4	0.3	0.5	1.0	0.6	0.0	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	84.6	77.4	7.3	6.6	0.4	87.8	89.6	90.8	6.8	84.9	12.5	10.5	1.1	23	23	26	27
A2	85.5	78.1	7.4	6.4	0.4	88.8	90.5	91.7	6.3	85.4	14.0	13.5	1.2	23	23	26	27
A4	84.9	77.1	7.9	6.5	0.4	88.2	89.4	90.5	6.4	85.0	16.0	16.0	1.0	23	26	23	27
A5	84.4	76.9	7.5	7.0	0.5	87.7	89.6	90.8	6.9	84.8	12.0	10.0	1.3	23	23	26	27
A6	84.8	77.4	7.4	6.7	0.4	88.2	89.6	90.8	6.5	84.7	13.0	13.5	1.1	22	26	23	27
A7	84.1	76.8	7.3	6.5	0.4	87.3	89.2	90.5	6.8	84.5	13.0	10.0	1.0	23	23	26	22
A8	84.7	77.0	7.7	6.5	0.4	88.0	89.4	90.6	6.2	84.6	15.5	15.0	1.2	23	23	26	27
Avg.	84.7	77.2	7.5	6.6	0.4	88.0	89.6	90.8	6.6	84.8	13.7	12.6	1.1	-	-	-	-
Std Dv	0.4	0.4	0.2	0.2	0.0	0.5	0.4	0.4	0.3	0.3	1.5	2.5	0.1	-	-	-	-
90% CI	0.3	0.3	0.2	0.1	0.0	0.4	0.3	0.3	0.2	0.2	1.1	1.8	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh																	
I22	81.7	73.4	8.3	7.1	0.5	85.1	85.9	86.9	6.8	82.1	14.5	16.0	1.0	23	26	23	27
I24	82.5	74.8	7.8	6.3	0.4	85.8	87.1	88.3	5.8	82.0	17.0	19.5	1.2	23	26	23	75
I25	82.5	75.1	7.4	6.4	0.4	85.9	88.1	89.4	6.0	82.6	14.5	12.0	1.3	23	23	26	22
I26	84.0	75.9	8.0	7.0	0.5	87.0	88.2	89.3	6.7	83.6	14.0	14.0	1.1	23	23	26	22
Avg.	82.7	74.8	7.9	6.7	0.4	86.0	87.3	88.5	6.3	82.6	15.0	15.4	1.2	-	-	-	-
Std Dv	0.9	1.0	0.4	0.4	0.1	0.8	1.1	1.2	0.5	0.7	1.4	3.2	0.1	-	-	-	-
90% CI	1.1	1.2	0.4	0.5	0.1	0.9	1.3	1.4	0.6	0.9	1.6	3.8	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27		----------		NO DATA		----------											
J28	33.6	75.3	8.3	7.1	0.5	86.6	86.6	87.9	7.1	83.6	14.5	17.5	1.1	22	23	22	26
J29	85.0	76.2	8.8	7.4	0.5	87.4	88.2	89.2	7.2	85.0	15.0	14.0	0.9	23	26	23	27
J30	63.8	75.6	8.2	6.8	0.4	86.7	87.9	88.9	6.7	84.4	16.5	14.5	1.1	23	23	26	27
J31	84.9	78.5	6.5	5.9	0.4	87.4	89.5	90.2	6.5	84.7	12.5	13.0	0.7	18	26	27	28
Avg.	84.3	76.4	7.9	6.8	0.4	87.0	88.0	89.0	6.9	84.4	14.6	14.7	1.0	-	-	-	-
Std Dv	0.7	1.4	1.0	0.7	0.1	0.5	1.2	1.0	0.3	0.6	1.7	1.9	0.2	-	-	-	-
90% CI	0.9	1.7	1.2	0.8	0.1	0.5	1.4	1.1	0.4	0.7	1.9	2.3	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.1

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 1 CENTERLINE - CENTER AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	87.7	80.8	6.9	6.0	0.3	90.6	92.7	94.0	6.2	89.6	14.5	12.0	1.3	18	25	26	24
C34	90.1	81.9	8.2	6.4	0.3	92.6	92.9	93.8	6.9	89.8	19.0	18.5	0.9	18	23	24	26
C36	89.1	81.1	8.0	6.9	0.4	91.9	93.1	94.1	6.7	89.9	14.5	14.5	1.0	25	25	26	24
C38	90.4	81.2	9.2	6.9	0.4	92.9	92.4	93.6	7.0	90.3	21.5	21.0	1.2	25	25	27	26
C40	91.0	84.3	6.7	5.9	0.3	93.3	94.8	95.2	6.8	91.0	13.5	15.5	0.4	28	26	24	23
C42	90.7	84.0	6.7	5.5	0.3	93.3	94.8	95.5	6.3	91.4	16.5	17.0	1.7	27	24	25	27
C44	91.1	82.0	9.1	7.0	0.4	93.5	93.0	93.7	7.5	91.2	20.0	20.5	0.7	22	22	25	21
C46	89.6	82.1	7.5	6.9	0.5	92.4	93.5	94.3	6.7	90.1	12.5	15.5	0.9	25	25	26	27
C48	87.4	78.5	8.9	6.8	0.4	90.2	90.8	91.7	6.7	88.9	20.5	19.5	0.9	25	25	22	23
C50	89.4	80.2	9.2	7.3	0.5	92.1	92.4	93.4	7.1	89.6	18.0	17.0	1.0	25	25	27	23
Avg.	89.7	81.6	8.0	6.6	0.4	92.3	93.0	93.9	6.8	90.2	17.0	17.1	1.0	-	-	-	-
Std Dv	1.3	1.7	1.0	0.6	0.1	1.1	1.2	1.0	0.4	0.8	3.2	2.8	0.3	-	-	-	-
90% CI	0.7	1.0	0.6	0.3	0.0	0.6	0.7	0.6	0.2	0.5	1.9	1.6	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	84.4	75.3	9.1	7.4	0.5	87.8	87.5	89.6	6.9	82.4	17.0	15.5	2.1	22	22	25	35
B37	84.3	74.9	9.5	7.3	0.5	88.2	87.9	89.8	7.0	83.1	19.5	15.5	1.9	22	22	25	34
B39	83.6	74.6	9.0	7.0	0.4	87.7	87.1	88.8	7.3	81.8	19.5	16.5	1.7	22	25	35	34
B41	84.6	75.8	8.8	7.0	0.4	88.2	88.2	90.1	6.7	82.7	18.0	16.5	2.1	22	22	25	35
B43	84.1	74.2	9.9	7.1	0.4	88.0	86.7	88.9	7.1	82.0	25.5	19.0	2.2	22	22	25	24
B45	84.8	75.5	9.3	6.8	0.4	88.4	87.7	89.8	7.0	82.6	23.0	16.5	2.2	22	22	25	34
B47	84.7	75.4	9.3	7.2	0.4	88.9	88.7	91.2	6.8	83.6	19.5	14.0	2.4	22	22	25	35
B49	84.4	75.0	9.4	7.6	0.5	88.2	88.0	90.1	6.9	83.0	17.5	15.0	2.1	22	22	25	34
B52	83.9	75.2	8.7	7.0	0.4	87.7	87.8	89.7	6.8	82.7	17.5	15.5	2.2	22	22	25	34
Avg.	84.3	75.1	9.2	7.2	0.4	88.1	87.8	89.8	6.9	82.7	19.7	16.0	2.1	-	-	-	-
Std Dv	0.4	0.5	0.4	0.2	0.0	0.4	0.6	0.7	0.2	0.6	2.8	1.4	0.2	-	-	-	-
90% CI	0.2	0.3	0.2	0.1	0.0	0.2	0.4	0.4	0.1	0.3	1.8	0.9	0.1	-	-	-	-
300 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
G9	79.9	70.7	9.2	6.8	0.4	82.6	82.2	83.3	7.1	78.6	23.0	20.0	1.7	22	22	26	24
G10	80.2	70.5	9.6	6.7	0.3	83.2	82.3	83.9	6.6	78.5	27.5	26.0	1.6	23	26	23	27
G11	79.6	70.5	9.1	6.8	0.4	82.6	82.2	83.3	7.1	78.9	21.5	20.0	1.5	22	22	26	23
G13	79.7	69.4	10.2	7.5	0.5	82.5	81.8	83.6	6.9	78.6	23.0	19.5	1.8	22	22	25	26
G14	80.1	69.9	10.2	7.1	0.4	83.2	81.7	83.1	7.1	78.3	28.0	26.5	1.5	23	26	23	27
G15	79.5	69.6	9.9	6.5	0.3	82.4	81.4	82.4	6.7	77.8	33.5	32.0	1.0	23	26	23	27
G16	79.1	69.1	10.0	6.9	0.4	81.9	81.0	82.1	7.0	77.7	27.5	25.0	1.1	23	26	23	27
Avg.	79.7	70.0	9.7	6.9	0.4	82.6	81.8	83.1	6.9	78.4	26.3	24.1	1.5	-	-	-	-
Std Dv	0.4	0.6	0.5	0.3	0.0	0.4	0.5	0.6	0.2	0.4	4.1	4.6	0.3	-	-	-	-
90% CI	0.3	0.5	0.3	0.2	0.0	0.3	0.4	0.5	0.2	0.3	3.0	3.4	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

APPENDIX B

"As Measured" Magnetic Recording Acoustical Data and Duration Time for Flight Operations

This appendix contains magnetic recording acoustical data for flight operations on August 27, 28, and 29, 1984. Below, terms used in this appendix are synopsized and defined to aid the reader. The reader may also find it helpful to refer to Figure 5, a measurement site schematic, and Figure 13, a diagram of the magnetic recording instrumentation systems.

DEFINITIONS

A Brief synopsis of "As Measured " data column headings is presented.

EV	Event Number
SEL	Sound Exposure Level, the total sound energy measured within the period determined by the 10dB down duration of the A-weighted time history. Reference duration, 1-second.
ALm	A-weighted Sound Level (maximum)
SEL-ALm	Duration Correction Factor
K(A)	Constant used to obtain the Duration Correction for SEL, where:
	K(A) = (SEL-ALm)÷(Log DUR(A))
Q	Time History Shape Factor, where:
	$Q=(10^{0.1(SEL-ALm)} \div (DUR(A))$
EPNL	Effective Perceived Noise Level
PNLm	Perceived Noise Level (maximum)
PNLTm	Tone Corrected Perceived Noise Level (maximum)
K(P)	Constant used to obtain the Duration Correction for EPNL, where:
	K(P)=(EPNL-PNLTm + 10)÷(Log DUR(P))
OASPLm	Overall Sound Pressure Level (maximum)
DUR(A)	The 10 dB down Duration Time for A-weighted time history
DUR(P)	The 10 dB down Duration Time for the PNLT time history
TC	Tone Correction Factor calculated at PNLTm
BAND	Frequency band number for largest TC factor
MAX NOY BANDS	3-1/3 octave bands exhibiting the largest Noy value in the PNLTm spectrum

Each set of data is headed by the site number, microphone location and test date. The target reference conditions is specified above each data subset.

HELICOPTER: BELL 206 L-1 TABLE A.50

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (0.7*VH)/TARGET IAS=91 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
J-27	83.9	75.3	14.5	7.4	.5
J-28	84	75.4	14	7.5	.5
J-29	84.9	76.1	14.5	7.6	.5
J-30	83.8	76	14.3	6.8	.4
J-31	84.8	NA	12	NA	NA
AVERAGE	84.30	75.70	13.90	7.30	.5
N	5	4	5	4	4
STD.DEV.	0.53	0.41	1.06	.38	.05
90% C.I.	0.50	0.48	1.01	.45	.06

HELICOPTER: BELL 206 L-1 TABLE A.51

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (0.7*VH)/TARGET IAS=91 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
J-27	83.7	75.5	14.5	7.1	.5
J-28	84	76.1	15.1	6.7	.4
J-29	85	76.7	14.2	7.2	.5
J-30	83.6	75.7	13.3	7	.5
J-31	84.4	75.7	13.9	7.6	.5
AVERAGE	84.10	75.90	14.20	7.10	.5
N	5	5	5	5	5
STD.DEV.	0.57	0.48	0.67	.33	.04
90% C.I.	0.55	0.46	0.64	.31	.04

HELICOPTER: BELL 206 L-1 TABLE A.48

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
K-41	92.3	84.1	14.7	7	.4
K-42	90.3	82.2	13.3	7.2	.5
K-43	92.5	84.7	14.3	6.8	.4
K-44	90.4	81.9	15.7	7.1	.5
K-45	91.8	83.5	15.3	7	.4
K-46	92.3	NA	15.4	NA	NA
AVERAGE	91.60	83.30	14.80	7.00	.4
N	6	5	6	5	5
STD.DEV.	1.00	1.20	0.89	.17	.02
90% C.I.	0.82	1.15	0.73	.16	.02

HELICOPTER: BELL 206 L-1 TABLE A.49

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (0.7*VH)/TARGET IAS=91 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
J-27	NA	72.1	12.4	NA	NA
J-28	84.8	71.4	13	12	1.7
J-29	84.6	72.1	14.5	10.8	1.2
J-30	83.9	NA	13.3	NA	NA
J-31	84.2	NA	14.1	NA	NA
AVERAGE	84.40	71.90	13.50	11.40	1.5
N	4	3	5	2	2
STD.DEV.	0.40	0.40	0.84	.9	.32
90% C.I.	0.47	0.68	0.81	4	1.42

HELICOPTER: BELL 206 L-1 TABLE A.46

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
K-41	NA	NA	17.4	NA	NA
K-42	88.5	79	21.7	7.1	.4
K-43	88.8	79.2	18.7	7.5	.5
K-44	86.2	NA	NA	NA	NA
K-45	88.8	79.5	20.1	7.1	.4
K-46	NA	NA	18.3	NA	NA
AVERAGE	88.10	79.20	19.20	7.30	.4
N	4	3	5	3	3
STD.DEV.	1.26	0.25	1.68	.25	.04
90% C.I.	1.48	0.42	1.61	.42	.07

HELICOPTER: BELL 206 L-1 TABLE A.47

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
K-41	91.1	82.8	14.3	7.2	.5
K-42	89.8	81.7	15.2	6.9	.4
K-43	89.9	81.3	NA	NA	NA
K-44	NA	NA	13	NA	NA
K-45	91.4	83.5	13.3	7	.5
K-46	91.1	83.7	14.8	6.3	.4
AVERAGE	90.70	82.60	14.10	6.80	.4
N	5	5	5	4	4
STD.DEV.	0.75	1.07	0.95	.37	.05
90% C.I.	0.72	1.02	0.90	.44	.05

HELICOPTER: BELL 206 L-1 TABLE A.44

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (1.0*VH)/TARGET IAS=130 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
H-17	84.9	77.3	10.5	7.4	.5
H-18	85.4	78.6	12.7	6.2	.4
H-19	85.3	77.7	12	7	.5
H-20	85.1	77.8	10.7	7.1	.5
H-21	85.3	77.9	10.8	7.2	.5
AVERAGE	85.20	77.90	11.30	7.00	.5
N	5	5	5	5	5
STD.DEV.	0.20	0.47	0.96	.48	.06
90% C.I.	0.19	0.45	0.92	.46	.06

HELICOPTER: BELL 206 L-1 TABLE A.45

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (1.0*VH)/TARGET IAS=130 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
H-17	85.5	77.6	NA	NA	NA
H-18	86.2	79.1	10.1	7.1	.5
H-19	85.7	78.4	10.6	7.1	.5
H-20	85.8	78.8	10.7	6.8	.5
H-21	85.7	78.2	9.8	7.6	.6
AVERAGE	85.80	78.40	10.30	7.10	.5
N	5	5	4	4	4
STD.DEV.	0.26	0.58	0.42	.32	.04
90% C.I.	0.25	0.55	0.50	.37	.05

HELICOPTER: BELL 206 L-1 TABLE A.42

TEST DATE: 8-27-84

OPERATION: 492 FT. 150 FLYOVER (0.8*VH)/TARG IAS=104 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
I-22	83.2	74.5	14.5	7.5	.5
I-23	83.5	76	12.8	6.8	.4
I-24	NA	NA	15.7	NA	NA
I-25	83	75.2	12.8	7	.5
I-26	NA	NA	8.4	NA	NA
AVERAGE	83.20	75.20	12.80	7.10	.5
N	3	3	5	3	3
STD.DEV.	0.25	0.75	2.77	.36	.04
90% C.I.	0.42	1.27	2.64	.61	.06

HELICOPTER: BELL 206 L-1 TABLE A.43

TEST DATE: 8-27-84

OPERATION: 492 FT. 150 FLYOVER (0.8*VH)/TARG IAS=104 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
I-22	82.7	74.2	14.5	7.3	.5
I-23	82.5	74.2	13.5	7.3	.5
I-24	83	74.7	16.9	6.8	.4
I-25	83.2	75.3	14.9	6.7	.4
I-26	84.1	75.7	14.5	7.2	.5
AVERAGE	83.10	74.80	14.90	7.10	.5
N	5	5	5	5	5
STD.DEV.	0.62	0.67	1.25	.31	.05
90% C.I.	0.59	0.64	1.19	.29	.04

HELICOPTER: BELL 206 L-1 TABLE A.40

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (0.8*VH)/TARGET IAS=104 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
I-22	83.5	75.2	14.3	7.2	.5
I-23	82.8	74	15.3	7.4	.5
I-24	83.2	74.9	14.3	7.2	.5
I-25	83.3	74.9	13.5	7.4	.5
I-26	83.8	74.9	15.1	7.5	.5
AVERAGE	83.30	74.80	14.50	7.40	.5
N	5	5	5	5	5
STD.DEV.	0.37	0.45	0.72	.16	.02
90% C.I.	0.35	0.43	0.69	.16	.02

HELICOPTER: BELL 206 L-1 TABLE A.41

TEST DATE: 8-27-84

OPERATION: 492 FT. 150M FLYOVER (1.0*VH)/TARGET IAS=130 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
H-17	85.3	77.5	12.9	7	.5
H-18	86.6	79.4	8.7	7.7	.6
H-19	85.9	78.4	11.1	7.2	.5
H-20	85.9	79	11.3	6.6	.4
H-21	85.7	78.2	11.5	7.1	.5
AVERAGE	85.90	78.50	11.10	7.10	.5
N	5	5	5	5	5
STD.DEV.	0.47	0.73	1.52	.4	.06
90% C.I.	0.45	0.70	1.45	.38	.06

HELICOPTER: BELL 206 L-1

TABLE A.38

TEST DATE: 8-27-84

OPERATION: 984 FT. 300 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
G-9	80.9	71	20	7.6	.5
G-10	80.9	70.4	22.3	7.8	.5
G-11	80.7	71.3	20.8	7.1	.4
G-12	80.9	70	NA	NA	NA
G-13	NA	69.7	21.3	NA	NA
G-14	80.6	71	21.9	7.2	.4
G-15	80.3	69.7	NA	NA	NA
G-16	80.1	70.2	NA	NA	NA
AVERAGE	80.60	70.40	21.30	7.40	.5
N	7	8	5	4	4
STD.DEV.	0.32	0.62	0.91	.33	.04
90% C.I.	0.24	0.42	0.86	.38	.05

HELICOPTER: BELL 206 L-1

TABLE A.39

TEST DATE: 8-27-84

OPERATION: 984 FT. 300 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
G-9	80.2	71	21.7	6.9	.4
G-10	80.5	70.4	20.5	7.7	.5
G-11	80.1	70.3	20.7	7.4	.5
G-12	80	69.7	NA	NA	NA
G-13	79.6	69.2	21.8	7.8	.5
G-14	79.9	69.7	20.5	7.8	.5
G-15	79.5	69.4	NA	NA	NA
G-16	79.4	69.2	NA	NA	NA
AVERAGE	79.90	69.90	21.00	7.50	.5
N	8	8	5	5	5
STD.DEV.	0.38	0.65	0.65	.38	.05
90% C.I.	0.25	0.43	0.62	.36	.05

HELICOPTER: BELL 206 L-1 TABLE A.36

TEST DATE: 8-27-84

OPERATION: 984 FT. 300 M FLYOVER (0.9*VH)/TARGET IAS=117 KTS

PILOT: 1 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
G-9	80.9	70.7	21.6	7.6	.5
G-10	80.6	69.9	21	8.1	.6
G-11	80.4	69.4	NA	NA	NA
G-12	81	70.3	NA	NA	NA
G-13	80.5	70.1	NA	NA	NA
G-14	80.4	70.8	20.1	7.4	.5
G-15	80.5	70.2	23.1	7.6	.5
G-16	80.2	71	20.1	7.1	.4
AVERAGE	80.60	70.30	21.20	7.50	.5
N	8	8	5	5	5
STD.DEV.	0.27	0.52	1.25	.38	.05
90% C.I.	0.18	0.35	1.19	.36	.05

HELICOPTER: BELL 206 L-1 TABLE A.37

TEST DATE: 8-29-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CY-2	NA	NA	NA	NA	NA
CY-4	NA	NA	NA	NA	NA
CY-6	NA	NA	NA	NA	NA
CY-8	NA	NA	NA	NA	NA
CY-10	NA	NA	NA	NA	NA
CY-12	NA	NA	NA	NA	NA
CY-14	NA	NA	NA	NA	NA
CY-16	NA	NA	NA	NA	NA
CY-18	NA	NA	NA	NA	NA
AVERAGE					
N					
STD.DEV.					
90% C.I.					

HELICOPTER: BELL 206 L-1 TABLE A.34

TEST DATE: 8-29-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CY-2	NA	NA	11.8	NA	NA
CY-4	NA	NA	15.5	NA	NA
CY-6	NA	NA	NA	NA	NA
CY-8	90.1	82.3	15.7	6.5	.4
CY-10	91.8	82.6	13.3	8.2	.6
CY-12	89.8	82.5	15.9	6.1	.3
CY-14	90.9	82.4	NA	NA	NA
CY-16	91.4	84.1	NA	NA	NA
CY-18	91.2	83.9	NA	NA	NA
AVERAGE	90.90	83.00	14.40	6.90	.4
N	6	6	5	3	3
STD.DEV.	0.77	0.81	1.81	1.11	.15
90% C.I.	0.64	0.67	1.73	1.87	.26

HELICOPTER: BELL 206 L-1 TABLE A.35

TEST DATE: 8-29-84

OPERATION: 6 DEGREE APPROACH

PILOT: 2 MIC SITE: 5

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CY-2	NA	NA	11.3	NA	NA
CY-4	NA	NA	14.1	NA	NA
CY-6	NA	NA	11.2	NA	NA
CY-8	NA	NA	15.9	NA	NA
CY-10	NA	NA	14.6	NA	NA
CY-12	NA	NA	11.6	NA	NA
CY-14	NA	NA	15.9	NA	NA
CY-16	NA	NA	13.5	NA	NA
CY-18	NA	NA	13.7	NA	NA
AVERAGE			13.50		
N			9		
STD.DEV.			1.83		
90% C.I.			1.14		

TABLE A.32

HELICOPTER: BELL 206 L-1

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 4

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CZ-31	90.4	80.9	NA	NA	NA
CZ-33	89	79.1	NA	NA	NA
CZ-35	90.2	81.5	16.2	7.2	.5
CZ-37	89.7	81.5	17.5	6.6	.4
CZ-39	89.5	80.9	16.4	7.1	.4
AVERAGE	89.80	80.80	16.70	7.00	.4
N	5	5	3	3	3
STD.DEV.	0.56	0.99	0.70	.32	.04
90% C.I.	0.53	0.94	1.18	.53	.07

TABLE A.33

HELICOPTER: BELL 206 L-1

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH

PILOT: 1 MIC SITE: 1

RUN NO.	SEL(DB)	AL(DB)	T(10-DB)	K(A)	Q
CZ-31	91	83.1	15.7	6.6	.4
CZ-33	89.5	80.5	14.7	7.7	.5
CZ-35	90.8	81.8	16.5	7.4	.5
CZ-37	88.8	81.4	16.2	6.1	.3
CZ-39	90.5	82.8	15.7	6.4	.4
AVERAGE	90.10	81.90	15.80	6.90	.4
N	5	5	5	5	5
STD.DEV.	0.94	1.06	0.68	.67	.08
90% C.I.	0.89	1.01	0.65	.64	.08

Table B.4

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/15/85

SITE: 10 CENTERLINE-CENTER (FLUSH) AUG. 27.1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh																	
H17	87.9	80.9	7.0	6.7	0.5	91.4	93.2	94.7	6.6	89.2	11.0	10.0	1.6	20	26	25	23
H18	88.4	81.9	6.5	6.0	0.4	92.1	94.3	95.8	5.9	90.3	12.0	11.5	1.6	20	25	26	23
H19	88.4	81.0	7.4	7.0	0.5	91.7	93.7	95.0	6.8	89.9	11.5	10.0	1.3	22	24	26	25
H20	88.1	81.7	6.4	6.5	0.5	91.6	94.0	95.6	6.2	90.3	9.5	9.5	1.6	20	25	26	23
H21	88.2	81.4	6.9	6.6	0.4	91.7	93.4	94.9	6.8	89.3	11.0	10.0	1.6	20	25	26	23
Avg.	88.2	81.4	6.8	6.6	0.4	91.7	93.7	95.2	6.4	89.8	11.0	10.2	1.5	-	-	-	-
Std Dv	0.2	0.4	0.4	0.4	0.0	0.2	0.5	0.5	0.4	0.5	0.9	0.8	0.1	-	-	-	-
90% CI	0.2	0.4	0.4	0.3	0.0	0.2	0.4	0.4	0.4	0.5	0.9	0.7	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	88.1	81.2	7.0	6.6	0.4	91.6	93.5	94.9	6.6	88.8	11.5	10.5	1.4	20	26	25	23
A2	88.8	82.1	6.6	6.6	0.5	92.4	94.4	95.9	6.4	89.6	10.0	10.0	1.5	20	26	25	23
A4	88.1	81.0	7.2	6.6	0.4	91.7	93.2	94.6	6.5	88.6	12.0	12.5	1.4	20	26	25	23
A5		----------		NO DATA		----------											
A6	88.3	81.3	6.9	6.5	0.4	91.8	93.7	95.1	6.5	88.9	11.5	11.0	1.6	20	26	25	23
A7	87.7	80.9	6.8	6.5	0.4	91.3	93.1	94.9	6.6	88.7	11.0	9.5	1.7	20	26	25	23
A8	88.0	80.9	7.1	6.6	0.4	91.6	93.2	94.8	6.4	88.6	12.0	11.5	1.6	20	23	26	25
Avg.	88.2	81.2	6.9	6.6	0.4	91.7	93.5	95.1	6.5	88.9	11.3	10.8	1.5	-	-	-	-
Std Dv	0.3	0.5	0.2	0.1	0.0	0.4	0.5	0.5	0.1	0.4	0.8	1.1	0.1	-	-	-	-
90% CI	0.3	0.4	0.2	0.0	0.0	0.3	0.4	0.4	0.1	0.3	0.6	0.9	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh																	
I22	86.1	77.9	8.2	7.2	0.5	89.5	90.3	91.4	7.2	87.2	14.0	13.0	1.2	22	24	26	22
I24	86.0	78.4	7.5	6.4	0.4	89.4	90.9	92.0	6.3	86.6	15.0	14.5	1.2	20	26	24	23
I25	86.2	79.1	7.1	6.3	0.4	89.6	91.8	92.6	6.3	87.3	13.5	12.5	0.8	20	23	26	24
I26	86.8	79.1	7.7	6.9	0.5	90.0	91.2	92.1	7.0	87.1	13.0	13.5	0.9	20	26	24	25
Avg.	86.3	78.6	7.6	6.7	0.4	89.6	91.0	92.0	6.7	87.1	13.9	13.4	1.0	-	-	-	-
Std Dv	0.4	0.6	0.5	0.4	0.1	0.3	0.6	0.5	0.5	0.3	0.9	0.9	0.2	-	-	-	-
90% CI	0.4	0.7	0.6	0.5	0.1	0.3	0.7	0.6	0.5	0.3	1.0	1.0	0.2	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27	86.8	78.5	8.3	7.5	0.5	89.3	90.9	91.5	7.2	88.4	12.5	12.5	0.5	22	26	24	25
J28	86.8	77.8	9.0	7.5	0.5	89.6	90.2	91.2	7.2	87.4	16.0	14.5	1.1	22	24	22	26
J29	87.7	79.2	8.6	7.4	0.5	90.1	91.5	92.3	6.9	88.5	14.5	13.5	0.9	20	24	26	27
J30	86.9	78.6	8.3	6.9	0.4	89.8	91.0	91.8	6.6	87.9	16.0	14.5	0.9	20	24	23	26
J31	87.8	81.5	6.3	5.8	0.4	90.1	92.4	92.4	6.5	88.3	12.0	15.0	-	37	26	27	25
Avg.	87.2	79.1	8.1	7.0	0.5	89.8	91.2	91.8	6.9	88.1	14.2	14.0	0.7	-	-	-	-
Std Dv	0.5	1.4	1.0	0.7	0.1	0.3	0.8	0.5	0.3	0.5	1.9	1.0	0.4	-	-	-	-
90% CI	0.5	1.4	1.0	0.7	0.1	0.3	0.8	0.5	0.3	0.4	1.8	1.0	0.4	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.5

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	88.4	77.5	10.9	7.7	0.5	91.1	88.8	90.6	7.6	87.0	26.0	24.0	1.7	27	24	27	26
C34	88.0	78.1	9.9	6.9	0.4	90.6	89.6	91.5	6.5	87.4	27.0	25.5	1.9	27	24	23	27
C36	88.9	77.8	11.1	7.2	0.4	91.5	89.7	91.3	6.7	87.6	34.5	34.0	1.8	27	23	24	27
C38	88.9	77.9	11.0	8.2	0.6	91.6	89.8	91.5	7.6	88.1	22.0	21.5	1.9	27	23	27	24
C40	87.5	78.0	9.5	6.7	0.3	90.2	89.8	91.5	6.2	87.0	26.5	25.0	1.7	27	24	23	27
C42	86.2	75.9	10.4	7.6	0.5	89.0	87.6	88.4	7.7	87.1	23.5	23.5	2.0	27	24	27	23
C44	88.4	76.6	11.8	7.8	0.5	90.9	88.2	89.7	7.6	87.7	31.5	30.5	1.5	27	25	24	23
C46	89.8	78.9	10.9	7.5	0.4	92.1	90.7	91.6	7.4	88.2	28.5	27.0	0.9	23	23	24	26
C48	87.4	77.8	9.7	6.9	0.4	90.1	89.8	90.9	6.6	87.4	24.5	24.5	1.3	27	24	27	23
C50	87.8	77.8	10.0	7.3	0.4	90.5	89.6	90.6	7.2	86.8	24.0	23.5	0.7	27	24	23	26
Avg.	88.1	77.6	10.5	7.4	0.4	90.8	89.4	90.8	7.1	87.4	26.8	25.9	1.6	-	-	-	-
Std Dv	1.0	0.8	0.7	0.5	0.1	0.9	0.9	1.0	0.6	0.5	3.8	3.7	0.4	-	-	-	-
90% CI	0.6	0.5	0.4	0.3	0.0	0.5	0.5	0.6	0.3	0.3	2.2	2.2	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	84.2	74.2	10.0	7.7	0.5	87.3	85.8	88.6	7.0	82.4	20.0	17.0	2.8	22	24	22	32
B37	85.0	74.1	10.9	7.7	0.5	88.2	86.0	88.4	7.0	82.3	26.0	25.0	2.4	19	22	24	34
B39	84.3	73.7	10.6	7.7	0.5	88.1	86.1	88.9	6.8	82.1	24.0	22.5	2.8	22	22	24	32
B41	85.2	75.5	9.7	7.4	0.4	88.1	86.2	89.0	7.1	83.1	21.0	19.0	2.7	22	24	32	34
B43	82.9	71.9	11.0	7.8	0.5	86.5	84.2	87.0	7.2	80.8	25.5	20.5	2.7	22	22	24	32
B45	84.4	73.4	11.0	7.8	0.5	87.8	85.7	88.4	7.1	82.3	26.0	21.0	2.7	22	22	24	32
B47	84.9	74.4	10.5	7.2	0.4	88.4	86.5	88.8	7.1	83.5	28.5	22.5	2.3	22	22	24	26
B49	84.7	74.5	10.2	7.5	0.5	88.0	86.1	88.5	7.2	82.4	22.5	21.0	2.5	22	34	33	32
B52	84.5	73.5	11.0	8.1	0.5	87.6	85.3	87.9	7.5	83.1	23.5	19.5	2.6	19	22	24	32
Avg.	84.5	73.9	10.6	7.7	0.5	87.8	85.8	88.4	7.1	82.5	24.1	20.9	2.6	-	-	-	-
Std Dv	0.7	1.0	0.5	0.2	0.0	0.6	0.7	0.6	0.2	0.8	2.7	2.3	0.2	-	-	-	-
90% CI	0.4	0.6	0.3	0.2	0.0	0.4	0.4	0.4	0.1	0.5	1.7	1.4	0.1	-	-	-	-
300 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
69	80.4	70.3	10.1	7.3	0.4	84.2	83.4	85.2	7.0	81.1	23.5	20.0	1.7	23	23	22	33
610	79.4	68.0	11.4	7.9	0.5	82.2	80.1	81.6	7.4	81.2	28.5	27.0	1.5	27	27	26	25
611	80.7	71.7	9.0	7.0	0.4	84.6	84.4	86.4	6.7	81.4	19.5	17.0	2.1	23	23	26	32
613	79.8	69.8	10.0	7.4	0.4	83.6	82.3	84.3	7.2	80.0	22.5	19.5	2.0	23	23	26	33
614	79.9	68.9	11.0	7.3	0.4	82.6	80.7	81.9	7.3	80.4	31.5	29.5	1.2	22	22	25	34
615	80.6	69.2	11.4	7.8	0.5	84.2	82.4	84.6	7.1	80.0	29.5	23.0	2.2	23	23	26	32
616	79.2	68.7	10.5	7.5	0.5	82.0	80.5	81.6	7.6	80.7	24.5	24.0	1.0	23	26	27	25
Avg.	80.0	69.5	10.5	7.5	0.4	83.4	82.0	83.6	7.2	80.7	25.6	22.9	1.7	-	-	-	-
Std Dv	0.6	1.2	0.9	0.3	0.0	1.1	1.6	2.0	0.3	0.6	4.3	4.4	0.5	-	-	-	-
90% CI	0.4	0.9	0.6	0.2	0.0	0.8	1.2	1.4	0.2	0.4	3.2	3.2	0.3	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.6

US/CNANDIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh																	
H17	84.7	75.4	9.3	7.2	0.4	88.1	87.5	89.2	7.1	86.3	19.5	18.5	1.7	22	23	22	33
H18	85.0	76.6	8.4	7.1	0.5	88.3	88.6	90.0	7.1	88.5	15.5	14.5	1.4	22	24	34	27
H19	84.3	76.0	8.3	7.0	0.4	87.8	88.0	89.4	6.9	86.7	15.5	16.0	1.5	22	33	23	24
H20	85.0	76.9	8.1	7.1	0.5	88.2	89.0	90.1	7.3	88.7	13.5	13.0	1.2	22	24	27	34
H21	85.5	76.4	9.1	7.6	0.5	89.1	88.5	90.0	7.5	86.8	16.0	16.0	1.7	22	23	22	32
Avg.	84.9	76.2	8.7	7.2	0.5	88.3	88.3	89.7	7.2	87.4	16.0	15.6	1.5	-	-	-	-
Std Dv	0.4	0.6	0.5	0.2	0.0	0.5	0.6	0.4	0.2	1.1	2.2	2.0	0.2	-	-	-	-
90% CI	0.4	0.6	0.5	0.2	0.0	0.5	0.5	0.4	0.2	1.1	2.1	1.9	0.2	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	84.3	74.9	9.4	7.4	0.5	87.7	87.1	88.8	7.1	85.3	18.5	17.5	1.7	22	23	33	32
A2	83.8	75.1	8.7	7.2	0.5	87.3	87.4	88.7	7.0	87.4	16.5	17.0	1.4	22	24	34	33
A4	83.6	74.8	8.8	7.0	0.4	86.9	87.2	88.3	7.1	86.6	18.0	16.5	1.2	24	24	34	27
A5	84.5	74.6	9.9	7.6	0.5	87.6	86.6	88.3	7.4	84.7	20.0	18.5	1.8	22	33	34	32
A6	83.5	74.6	9.0	7.4	0.5	87.0	86.7	87.9	7.3	86.5	16.5	17.0	1.3	22	24	34	35
A7	84.1	75.0	9.1	7.0	0.4	87.5	87.0	88.7	6.8	84.7	20.0	19.0	1.7	20	23	34	33
A8	83.4	74.5	8.9	7.2	0.4	86.7	86.5	87.7	7.2	86.6	17.5	17.5	1.3	22	24	35	34
Avg.	83.9	74.8	9.1	7.2	0.5	87.2	86.9	88.4	7.1	85.9	18.1	17.6	1.5	-	-	-	-
Std Dv	0.4	0.2	0.4	0.2	0.0	0.4	0.3	0.4	0.2	1.1	1.5	0.9	0.3	-	-	-	-
90% CI	0.3	0.2	0.3	0.2	0.0	0.3	0.3	0.3	0.1	0.8	1.1	0.7	0.2	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh																	
I22	81.3	71.8	9.5	7.3	0.5	84.5	83.8	85.0	7.3	84.1	19.5	19.5	1.2	22	34	35	22
I24	81.2	71.6	9.6	7.3	0.4	84.2	83.9	85.2	6.9	83.4	21.0	20.0	1.3	22	22	26	34
I25	82.3	73.3	9.0	7.1	0.4	85.9	85.6	87.4	6.8	83.3	18.0	17.5	2.0	22	22	32	34
I26	82.2	72.9	9.4	7.3	0.5	85.3	85.1	85.9	7.3	84.0	19.0	20.0	0.8	28	26	25	28
Avg.	81.8	72.4	9.4	7.3	0.4	85.0	84.6	85.9	7.1	83.7	19.4	19.2	1.3	-	-	-	-
Std Dv	0.6	0.8	0.3	0.1	0.0	0.7	0.9	1.1	0.2	0.4	1.2	1.2	0.5	-	-	-	-
90% CI	0.7	1.0	0.3	0.1	0.0	0.9	1.0	1.2	0.3	0.5	1.5	1.4	0.6	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27	82.4	73.1	9.3	6.6	0.3	85.6	85.9	87.1	6.8	83.1	26.0	18.0	1.2	22	23	22	33
J28	82.1	72.5	9.5	7.3	0.4	85.0	84.7	85.8	7.3	85.6	20.0	18.5	1.1	22	34	22	26
J29	81.2	71.8	9.4	7.1	0.4	84.6	84.4	85.5	7.0	82.4	21.0	20.0	1.2	22	23	22	24
J30	81.1	70.6	10.4	7.7	0.5	84.2	83.5	84.5	7.3	85.2	22.5	21.0	1.0	22	24	23	27
J31	82.8	75.1	7.7	6.3	0.4	86.2	87.0	88.9	6.1	83.1	16.5	15.5	1.9	27	23	24	27
Avg.	81.9	72.6	9.3	7.0	0.4	85.1	85.1	86.4	6.9	83.9	21.2	18.6	1.3	-	-	-	-
Std Dv	0.8	1.7	1.0	0.6	0.1	0.8	1.4	1.7	0.5	1.4	3.5	2.1	0.3	-	-	-	-
90% CI	0.7	1.6	0.9	0.5	0.1	0.7	1.3	1.6	0.5	1.4	3.3	2.0	0.3	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.7

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	82.4	71.0	11.4	7.7	0.5	-	84.4	85.9	-	81.9	30.5	-	1.5	18	23	24	22
C34	83.7	73.2	10.5	6.9	0.3	87.5	86.5	87.5	6.6	83.0	34.0	32.0	1.0	19	23	22	24
C36		----------		NO DATA		----------											
C38		----------		NO DATA		----------											
C40	83.5	73.1	10.5	7.0	0.4	87.4	86.3	88.2	6.3	82.4	31.0	29.0	1.8	27	23	24	27
C42	84.0	73.9	10.2	7.3	0.4	87.6	86.5	88.0	7.0	82.1	24.5	23.0	1.6	27	24	23	25
C44	84.3	72.2	12.1	7.6	0.4	87.7	84.6	85.8	7.5	80.8	39.5	38.0	1.5	27	24	23	25
C46	82.6	71.6	11.0	7.2	0.4	86.3	85.5	86.8	6.4	81.2	33.5	31.0	1.3	23	23	22	24
C48	83.1	72.8	10.3	6.8	0.3	86.1	84.4	85.9	6.7	81.4	33.5	32.0	1.6	28	25	24	26
C50	82.6	71.2	11.4	7.1	0.3	86.2	84.0	84.9	7.1	79.9	40.5	40.0	1.3	27	24	23	25
Avg.	83.3	72.4	10.9	7.2	0.4	86.9	85.3	86.6	6.8	81.6	33.4	32.1	1.5	-	-	-	-
Std Dv	0.7	1.0	0.7	0.3	0.0	0.7	1.1	1.2	0.4	1.0	5.1	5.6	0.3	-	-	-	-
90% CI	0.5	0.7	0.5	0.2	0.0	0.5	0.7	0.8	0.3	0.7	3.4	4.1	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	84.1	73.3	10.8	7.6	0.5	87.5	86.6	89.1	6.3	85.1	26.0	21.5	2.5	22	24	22	34
B37	84.0	73.2	10.8	7.6	0.4	87.5	86.5	88.7	6.6	84.8	26.5	21.5	2.2	22	24	22	26
B39	83.8	72.3	11.5	8.0	0.5	87.3	85.4	88.0	7.1	83.7	27.5	21.0	2.6	22	24	22	27
B41	83.6	72.9	10.7	7.7	0.5	87.0	85.4	87.6	6.8	83.6	25.0	23.5	2.6	22	24	22	34
B43	82.8	72.1	10.8	7.9	0.5	86.5	84.9	87.5	6.9	83.7	23.5	20.0	2.6	22	24	22	27
B45	83.1	72.0	11.1	7.7	0.5	86.7	85.1	87.8	6.9	83.8	28.5	21.0	2.6	22	24	22	26
B47	83.4	72.4	11.0	7.6	0.4	87.3	86.0	88.1	6.7	85.1	28.0	23.0	2.1	22	24	22	27
B49	83.7	72.9	10.8	7.9	0.5	87.1	86.2	88.7	6.6	84.3	23.0	18.5	2.6	22	24	22	34
B52	82.9	71.4	11.5	8.2	0.6	86.4	84.2	86.8	7.0	83.0	25.5	23.5	2.6	22	24	22	34
Avg.	83.5	72.5	11.0	7.8	0.5	87.0	85.6	88.0	6.8	84.1	25.9	21.5	2.5	-	-	-	-
Std Dv	0.5	0.6	0.3	0.2	0.0	0.4	0.8	0.7	0.2	0.7	1.9	1.7	0.2	-	-	-	-
90% CI	0.3	0.4	0.2	0.1	0.0	0.3	0.5	0.4	0.1	0.5	1.2	1.0	0.1	-	-	-	-
300 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
G9	79.2	69.3	9.8	7.1	0.4	82.3	81.0	81.7	7.5	81.7	24.0	25.0	1.1	23	26	23	32
G10	80.6	70.4	10.2	7.2	0.4	84.7	83.8	85.7	6.6	81.3	26.5	23.0	2.1	23	23	22	33
G11		----------		NO DATA		----------											
G13	79.2	67.7	11.4	7.9	0.5	82.5	80.0	81.2	7.7	81.4	28.5	30.0	1.2	22	22	25	24
G14	80.7	70.4	10.4	7.3	0.4	84.9	83.9	86.0	6.4	81.1	27.0	24.5	2.2	23	23	22	26
G15	79.0	68.5	10.5	7.1	0.4	82.4	80.5	81.6	7.3	81.3	29.5	29.5	1.1	23	23	26	34
G16	80.0	70.7	9.3	6.7	0.4	84.5	84.2	85.9	6.4	81.1	24.0	21.5	1.9	23	23	22	26
Avg.	79.8	69.5	10.3	7.2	0.4	83.5	82.2	83.7	7.0	81.3	26.6	25.6	1.6	-	-	-	-
Std Dv	0.8	1.2	0.7	0.4	0.0	1.3	1.9	2.4	0.6	0.2	2.3	3.5	0.5	-	-	-	-
90% CI	0.6	1.0	0.6	0.3	0.0	1.0	1.6	2.0	0.5	0.2	1.9	2.8	0.5	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.8

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
150 m. FLYOVER -- TARGEET IAS 130kts. -- Vh																	
H17	83.9	75.7	8.2	6.6	0.4	87.2	87.5	88.6	7.1	88.1	17.0	16.5	1.0	22	34	35	24
H18	84.9	75.9	8.9	7.5	0.5	88.6	88.1	89.8	7.4	87.5	15.5	15.0	1.7	22	24	32	33
H19	84.0	75.7	8.3	7.0	0.4	87.5	88.0	89.6	6.8	88.7	15.5	15.0	1.6	22	24	34	35
H20	85.1	76.2	8.8	7.2	0.4	88.7	88.3	90.1	7.1	87.5	17.0	16.5	1.8	22	23	33	32
H21	84.0	75.4	8.6	7.0	0.4	87.5	87.3	88.5	7.3	88.4	16.5	17.0	1.3	22	24	34	33
Avg.	84.4	75.8	8.6	7.1	0.4	87.9	87.8	89.3	7.1	88.0	16.3	16.0	1.5	-	-	-	-
Std Dv	0.6	0.3	0.3	0.3	0.0	0.7	0.4	0.7	0.3	0.5	0.8	0.9	0.3	-	-	-	-
90% CI	0.5	0.3	0.3	0.3	0.0	0.7	0.4	0.7	0.2	0.5	0.7	0.9	0.3	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	83.5	74.8	8.7	6.9	0.4	86.9	87.0	88.2	7.0	87.0	18.0	17.5	1.1	22	24	23	35
A2	84.4	74.5	9.9	7.2	0.4	88.0	86.9	88.5	7.1	85.7	24.0	22.0	1.6	20	23	33	32
A4	84.7	74.6	10.1	7.2	0.4	88.2	87.6	89.1	6.9	85.9	24.5	21.5	1.5	22	23	22	33
A5	83.8	75.4	8.4	7.0	0.4	87.2	87.2	88.1	7.4	87.5	16.0	17.0	1.1	22	26	24	34
A6	84.3	74.8	9.6	7.2	0.4	87.8	87.1	88.8	7.0	85.4	21.0	19.5	1.7	20	23	33	34
A7	83.4	74.9	8.5	6.9	0.4	86.7	86.7	88.1	7.2	87.3	17.0	16.0	1.4	22	24	22	23
A8	84.3	74.1	10.2	7.4	0.4	87.9	86.6	88.4	7.1	85.2	24.0	22.0	2.1	20	23	33	32
Avg.	84.1	74.7	9.3	7.1	0.4	87.5	87.0	88.5	7.1	86.3	20.6	19.4	1.5	-	-	-	-
Std Dv	0.5	0.4	0.8	0.2	0.0	0.6	0.3	0.4	0.2	1.0	3.6	2.5	0.3	-	-	-	-
90% CI	0.4	0.3	0.6	0.1	0.0	0.4	0.2	0.3	0.1	0.7	2.7	1.9	0.3	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh																	
I22	82.1	72.2	9.9	7.0	0.4	85.7	84.5	86.4	6.9	83.5	26.0	22.0	1.9	22	22	23	33
I24	82.3	72.6	9.7	6.9	0.4	86.2	85.4	87.2	6.5	83.6	25.5	24.5	1.8	22	23	22	33
I25	81.2	72.5	8.7	7.0	0.4	84.5	84.5	85.4	7.3	84.2	17.5	17.5	0.9	22	24	23	34
I26	81.8	72.4	9.4	7.1	0.4	85.7	84.8	86.5	7.0	83.2	21.0	20.5	1.7	22	22	23	34
Avg.	81.8	72.4	9.4	7.0	0.4	85.5	84.8	86.4	6.9	83.6	22.5	21.1	1.6	-	-	-	-
Std Dv	0.5	0.2	0.5	0.1	0.0	0.7	0.4	0.7	0.3	0.4	4.0	2.9	0.4	-	-	-	-
90% CI	0.6	0.2	0.6	0.1	0.0	0.9	0.5	0.8	0.4	0.5	4.7	3.4	0.5	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27	81.4	72.2	9.3	7.0	0.4	85.1	84.7	85.7	7.0	86.9	21.0	22.5	1.1	22	24	23	26
J28	81.8	71.5	10.3	7.2	0.4	85.6	84.0	85.8	7.0	82.4	26.5	25.0	1.8	22	22	23	33
J29	80.1	70.6	9.5	7.1	0.4	83.5	83.1	84.3	7.0	85.0	21.5	21.0	1.1	22	24	23	26
J30	81.2	71.1	10.0	7.3	0.4	85.0	84.2	85.6	6.8	83.4	23.5	23.5	1.5	22	22	23	24
J31	80.9	71.9	9.0	6.8	0.4	84.1	84.2	85.7	7.1	86.1	21.5	15.0	1.5	27	24	27	23
Avg.	81.1	71.5	9.6	7.1	0.4	84.7	84.0	85.4	7.0	84.8	22.8	21.4	1.4	-	-	-	-
Std Dv	0.6	0.6	0.5	0.2	0.0	0.8	0.6	0.6	0.1	1.9	2.3	3.9	0.3	-	-	-	-
90% CI	0.6	0.6	0.5	0.2	0.0	0.8	0.6	0.6	0.1	1.8	2.2	3.7	0.3	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.9

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/18/85

SITE: 4 CENTERLINE — 150 M. WEST AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	89.5	81.0	8.5	6.9	0.4	92.7	92.9	93.9	7.0	89.3	17.0	17.5	1.0	18	25	24	26
C34	90.3	80.3	10.0	6.8	0.3	92.6	91.4	92.4	7.4	87.5	29.0	23.0	1.0	25	25	26	27
C36	88.2	81.1	7.1	5.9	0.3	90.9	92.9	93.9	5.8	88.7	16.0	15.5	1.0	25	25	26	24
C38	88.4	79.3	9.2	7.3	0.5	91.0	90.9	92.0	7.3	87.4	18.0	17.0	1.1	25	25	26	28
C40	90.0	80.9	9.1	6.8	0.4	92.3	91.7	92.3	7.5	88.3	22.0	22.0	0.8	28	26	23	25
C42	88.8	82.1	6.8	5.8	0.3	91.4	92.8	93.7	6.4	89.4	14.5	15.5	0.9	18	23	27	25
C44	90.7	80.7	10.1	7.5	0.5	93.0	92.1	93.2	7.5	89.5	22.0	20.0	1.1	20	25	27	26
C46	88.0	78.3	9.7	7.0	0.4	90.7	89.9	91.0	7.0	86.1	24.0	24.5	1.1	25	25	26	23
C48	86.3	75.1	11.2	7.4	0.4	88.9	86.7	87.6	7.5	85.8	32.5	32.0	1.5	23	26	23	27
C50	89.2	79.8	9.4	7.1	0.4	91.9	91.6	92.3	7.2	98.0	21.5	21.0	0.8	25	25	26	23
Avg.	89.0	79.9	9.1	6.9	0.4	91.5	91.3	92.2	7.1	88.0	21.6	20.8	1.0	-	-	-	-
Std Dv	1.3	2.0	1.3	0.6	0.0	1.2	1.9	1.9	0.6	1.3	5.7	5.0	0.2	-	-	-	-
90% CI	0.8	1.1	0.8	0.3	0.0	0.7	1.1	1.1	0.3	0.8	3.3	2.9	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	82.9	73.9	9.0	7.0	0.4	86.1	85.4	87.4	6.9	79.1	19.0	18.0	2.0	22	34	33	32
B37	83.6	73.4	10.3	7.3	0.4	87.1	85.8	87.8	7.2	80.0	26.0	20.0	2.1	22	35	25	34
B39	82.6	71.7	10.9	7.4	0.4	86.1	84.4	86.6	7.0	78.8	30.5	23.0	2.2	22	22	34	35
B41	83.4	72.9	10.6	7.4	0.4	86.4	84.5	86.4	7.2	78.6	26.5	24.5	1.9	22	34	35	22
B43	82.9	71.9	11.0	7.0	0.3	85.9	84.4	86.4	7.3	78.8	36.5	19.5	2.1	22	22	35	34
B45	83.4	73.8	9.5	6.5	0.3	86.6	86.1	87.9	6.4	79.2	30.0	23.0	1.8	22	34	25	35
B47	83.3	72.6	10.6	7.2	0.4	86.9	85.1	87.0	7.5	79.5	29.5	21.0	2.2	22	22	25	34
B49	83.3	73.1	10.2	7.1	0.4	86.9	85.3	87.5	7.0	79.7	27.0	22.[illegible]	2.1	22	22	34	35
B52	82.7	72.6	10.1	6.9	0.4	85.9	85.2	87.2	6.9	79.4	28.5	19.0	1.9	22	22	34	33
Avg.	83.1	72.9	10.2	7.1	0.4	86.4	85.1	87.1	7.0	79.2	28.2	21.2	2.0	-	-	-	-
Std Dv	0.4	0.8	0.6	0.3	0.0	0.5	0.6	0.6	0.3	0.5	4.7	2.2	0.1	-	-	-	-
90% CI	0.2	0.5	0.4	0.2	0.0	0.3	0.4	0.3	0.2	0.3	2.9	1.4	0.1	-	-	-	-
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
B9	81.2	71.2	9.9	7.1	0.4	84.0	82.8	83.5	7.5	78.1	25.0	25.0	1.7	23	26	23	27
B10	80.8	70.3	10.5	7.3	0.4	83.5	82.3	83.5	7.4	78.2	27.0	22.5	1.2	23	23	26	27
B11	80.6	71.5	9.1	6.4	0.3	83.3	83.0	83.9	7.2	78.6	26.5	20.0	0.9	23	23	26	27
B13	80.6	69.7	10.9	7.7	0.5	83.4	81.3	83.0	7.5	77.7	25.5	24.5	1.6	23	26	23	27
B14	80.5	71.1	9.5	6.8	0.4	83.3	83.1	84.5	6.8	78.2	24.5	19.5	1.4	23	23	26	27
B15	80.2	70.0	10.2	7.1	0.4	83.1	81.8	82.8	7.2	77.7	28.0	26.5	1.0	23	23	26	27
B16	80.5	70.4	10.1	6.5	0.3	83.3	82.2	83.4	6.5	77.6	36.0	33.0	1.2	23	26	23	27
Avg.	80.6	70.6	10.0	7.0	0.4	83.4	82.4	83.5	7.2	78.0	27.5	24.4	1.3	-	-	-	-
Std Dv	0.3	0.7	0.6	0.5	0.1	0.3	0.6	0.6	0.4	0.4	3.9	4.6	0.3	-	-	-	-
90% CI	0.2	0.5	0.4	0.3	0.0	0.2	0.5	0.4	0.3	0.3	2.9	3.4	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.10

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/18/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 4 CENTERLINE - 150 M. WEST AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
150 m. FLYOVER -- TARGET IAS 130 kts. -- Vh																	
H17	84.6	77.1	7.5	6.8	0.4	87.9	89.2	90.4	7.1	84.4	12.5	11.5	1.3	23	23	26	33
H18	85.8	78.8	7.0	6.2	0.4	89.2	91.2	92.5	6.1	86.3	13.5	12.5	1.3	23	23	26	33
H19	85.3	78.2	7.1	6.8	0.5	88.5	90.2	91.5	6.8	85.6	11.0	10.5	1.3	23	23	26	34
H20	85.4	78.6	6.7	6.4	0.4	88.6	90.9	92.1	6.4	86.5	11.0	10.5	1.3	23	26	23	34
H21	85.2	78.1	7.1	6.9	0.5	88.4	89.8	91.1	7.2	85.1	11.0	10.5	1.1	23	26	23	34
Avg.	85.2	78.2	7.1	6.6	0.4	88.5	90.2	91.5	6.7	85.6	11.8	11.1	1.3	-	-	-	-
Std Dv	0.4	0.7	0.3	0.3	0.0	0.5	0.8	0.8	0.5	0.9	1.2	0.9	0.1	-	-	-	-
90% CI	0.4	0.6	0.3	0.3	0.0	0.5	0.8	0.8	0.4	0.8	1.1	0.9	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	84.9	77.7	7.2	6.8	0.5	88.1	89.8	90.8	6.9	84.5	11.5	11.5	1.2	23	26	23	27
A2	85.7	78.6	7.1	6.8	0.5	89.0	91.1	92.6	6.3	85.4	11.0	10.5	1.5	23	23	26	27
A4	85.5	77.9	7.5	7.0	0.5	88.5	90.1	91.2	6.7	84.7	12.0	12.0	1.1	23	26	23	27
A5	84.5	77.4	7.1	6.5	0.4	87.9	89.9	91.0	6.5	84.5	12.5	12.0	1.1	23	23	26	27
A6	85.3	78.1	7.1	6.9	0.5	88.4	90.4	91.5	6.7	84.6	11.0	10.5	1.4	23	26	23	27
A7	84.9	77.4	7.4	7.3	0.5	88.0	89.7	90.7	7.3	84.1	10.5	10.0	1.3	23	23	26	27
A8	84.9	77.2	7.6	7.0	0.5	88.1	89.9	91.4	6.5	84.3	12.5	11.0	1.5	23	23	26	27
Avg.	85.1	77.8	7.3	6.9	0.5	88.3	90.1	91.3	6.7	84.6	11.6	11.1	1.3	-	-	-	-
Std Dv	0.4	0.5	0.2	0.2	0.0	0.4	0.5	0.6	0.3	0.4	0.8	0.8	0.2	-	-	-	-
90% CI	0.3	0.4	0.2	0.2	0.0	0.3	0.4	0.5	0.2	0.3	0.6	0.6	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104 kts. -- 0.8Vh																	
I22	83.0	74.4	8.6	7.3	0.5	85.9	86.8	87.7	7.2	82.2	15.0	14.0	0.8	23	26	23	22
I24	82.9	73.9	9.0	7.4	0.5	86.0	86.5	87.9	7.0	81.9	16.0	14.5	1.2	22	23	26	22
I25	82.7	75.2	7.5	6.9	0.5	85.9	87.5	88.5	6.9	82.2	12.0	12.0	0.8	23	23	26	27
I26	84.1	78.5	5.6	5.6	0.4	87.3	91.3	92.1	5.4	86.5	10.0	9.0	0.7	23	23	25	22
Avg.	83.2	75.5	7.7	6.8	0.5	86.3	88.0	89.0	6.6	83.2	13.2	12.4	0.9	-	-	-	-
Std Dv	0.7	2.1	1.5	0.8	0.1	0.7	2.2	2.1	0.8	2.2	2.8	2.5	0.2	-	-	-	-
90% CI	0.8	2.5	1.8	1.0	0.1	0.8	2.6	2.4	0.9	2.6	3.2	2.9	0.3	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27	83.0	76.4	6.6	6.4	0.4	85.4	86.4	88.8	6.5	83.6	11.0	10.5	2.5	28	26	28	27
J28	84.6	77.7	6.9	6.2	0.4	87.1	89.3	90.0	6.4	84.5	13.0	13.0	0.6	23	26	23	27
J29	84.5	76.7	7.8	6.7	0.4	86.9	88.1	88.9	6.9	83.6	14.5	14.5	0.8	23	26	23	27
J30	83.9	75.9	7.9	6.4	0.4	86.4	88.0	89.1	6.6	83.9	17.5	13.0	1.1	23	23	26	27
J31	84.2	75.9	8.2	7.1	0.5	86.5	87.2	88.2	7.2	83.0	14.5	14.0	1.0	23	26	23	24
Avg.	84.0	76.5	7.5	6.5	0.4	86.5	87.8	89.0	6.7	83.7	14.1	13.0	1.2	-	-	-	-
Std Dv	0.6	0.7	0.7	0.4	0.0	0.7	1.1	0.6	0.3	0.5	2.4	1.5	0.7	-	-	-	-
90% CI	0.6	0.7	0.7	0.3	0.0	0.6	1.1	0.6	0.3	0.5	2.3	1.5	0.7	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

■ - TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.11

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/18/85

SITE: 5 CENTERLINE - 150 M. EAST AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
C32	88.1	79.7	8.4	7.0	0.4	90.9	92.0	92.8	6.8	89.0	16.0	15.5	0.8	25	25	24	26
C34	90.3	82.3	8.1	6.6	0.4	93.0	94.0	94.9	6.6	90.8	16.5	17.0	0.9	25	25	23	26
C36	91.4	83.6	7.7	7.1	0.5	93.9	95.3	96.3	7.0	91.6	12.5	12.5	1.0	25	25	26	27
C38	91.6	82.7	8.9	7.2	0.4	93.9	94.3	95.0	7.1	92.2	17.5	17.5	0.7	21	24	26	25
C40	88.3	79.5	8.8	6.7	0.4	91.1	91.4	92.2	6.8	88.6	20.0	20.0	0.9	25	25	26	23
C42	90.9	83.2	7.7	6.4	0.4	93.3	94.0	94.5	7.1	90.7	16.0	17.5	0.6	25	25	23	27
C44	91.4	82.0	9.5	7.3	0.5	94.0	93.9	94.6	7.2	92.2	19.5	20.0	0.7	22	22	24	21
C46	90.7	82.9	7.8	6.6	0.4	93.4	94.6	95.6	6.7	90.8	15.0	14.5	1.0	25	25	27	26
C48	89.7	83.6	6.1	5.8	0.4	92.4	95.3	96.1	5.9	91.4	11.5	11.5	0.9	25	25	26	27
C50	90.1	81.7	8.4	6.8	0.4	92.6	93.9	94.5	6.8	91.0	17.5	15.5	0.6	25	25	24	23
Avg.	90.2	82.1	8.1	6.8	0.4	92.9	93.9	94.7	6.8	90.8	16.2	16.1	0.8	-	-	-	-
Std Dv	1.2	1.5	0.9	0.4	0.0	1.1	1.3	1.3	0.4	1.2	2.7	2.8	0.1	-	-	-	-
90% CI	0.7	0.8	0.5	0.3	0.0	0.6	0.7	0.8	0.2	0.7	1.6	1.6	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
B33	85.9	77.8	8.1	6.8	0.4	89.2	90.3	92.2	6.4	84.5	15.5	12.5	1.9	22	22	34	35
B37	86.0	77.9	8.1	6.9	0.4	89.7	90.9	92.9	6.5	85.1	14.5	11.5	2.0	22	22	34	35
B39	85.7	77.2	8.5	6.7	0.4	89.2	90.0	92.1	6.4	84.2	18.5	13.5	2.0	22	22	35	34
B41	86.4	79.2	7.2	6.6	0.4	89.6	91.0	93.1	6.5	85.4	12.5	10.5	2.0	22	22	34	32
B43	85.5	77.4	8.0	6.8	0.4	89.6	90.4	92.5	7.0	84.9	15.0	10.5	2.1	22	22	25	35
B45	85.9	77.9	8.1	6.7	0.4	89.8	90.7	92.7	6.7	85.2	16.0	11.5	2.0	22	22	34	25
B47	87.1	79.1	8.0	6.8	0.4	90.7	91.9	93.9	6.4	86.0	14.5	11.5	2.1	22	34	35	22
B49	86.7	79.6	7.1	6.1	0.3	89.9	91.6	93.1	6.5	85.6	14.5	11.0	1.4	22	34	35	33
B52	86.2	78.8	7.4	6.3	0.4	89.3	91.3	93.0	6.3	85.9	14.5	10.0	1.7	22	22	34	35
Avg.	86.1	78.3	7.8	6.6	0.4	89.7	90.9	92.8	6.5	85.2	15.1	11.4	1.9	-	-	-	-
Std Dv	0.5	0.9	0.5	0.3	0.0	0.5	0.6	0.5	0.2	0.6	1.6	1.1	0.2	-	-	-	-
90% CI	0.3	0.5	0.3	0.2	0.0	0.3	0.4	0.3	0.1	0.4	1.0	0.7	0.1	-	-	-	-
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
G9	80.5	70.8	9.7	7.5	0.5	83.3	82.4	83.4	7.7	79.2	20.0	19.5	1.0	23	23	26	27
G10	80.6	70.2	10.4	7.1	0.4	83.3	81.9	82.9	7.0	78.2	29.5	29.5	1.0	23	23	26	27
G11	80.2	69.1	11.2	7.9	0.5	83.0	81.4	82.7	7.4	78.3	25.5	24.5	1.2	22	24	22	26
G13	80.4	70.3	10.1	7.4	0.4	83.2	82.1	83.2	7.6	79.3	23.0	20.5	1.1	23	23	26	27
G14	80.2	70.9	9.3	7.1	0.4	83.1	82.7	83.9	7.0	78.4	20.5	20.0	1.2	23	23	26	27
G15	80.4	70.4	9.9	7.0	0.4	82.9	82.0	83.0	7.4	78.2	26.0	22.0	1.3	23	26	23	27
G16	79.7	71.1	8.6	6.7	0.4	82.6	82.6	83.6	7.1	78.1	19.5	18.0	0.9	23	26	23	27
Avg.	80.3	70.4	9.9	7.2	0.4	83.0	82.2	83.3	7.3	78.5	23.4	22.0	1.1	-	-	-	-
Std Dv	0.3	0.7	0.8	0.4	0.1	0.3	0.4	0.4	0.3	0.5	3.7	3.9	0.2	-	-	-	-
90% CI	0.2	0.5	0.6	0.3	0.0	0.2	0.3	0.3	0.2	0.4	2.7	2.9	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.12

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/18/85

SITE: 5 CENTERLINE - 150 M. EAST AUG. 27,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh																	
H17	85.0	77.3	7.7	6.8	0.4	88.6	89.7	90.9	7.0	85.5	13.5	13.0	1.1	23	23	26	34
H18	85.4	78.7	6.6	6.8	0.5	88.8	90.9	92.0	6.3	86.8	9.5	12.0	1.1	23	26	23	27
H19	85.1	77.9	7.2	7.0	0.5	88.3	90.1	91.2	7.1	86.1	10.5	10.0	1.1	23	23	26	34
H20	85.1	78.7	6.4	6.4	0.4	88.3	90.8	92.1	6.6	86.4	10.0	9.0	1.2	23	26	23	27
H21	84.9	77.8	7.1	7.1	0.5	88.2	90.2	91.5	6.9	86.2	10.0	9.5	1.4	23	23	26	27
Avg.	85.1	78.1	7.0	6.8	0.5	88.4	90.3	91.5	6.8	86.2	10.7	10.7	1.2	-	-	-	-
Std Dv	0.2	0.6	0.5	0.3	0.0	0.2	0.5	0.5	0.3	0.5	1.6	1.7	0.1	-	-	-	-
90% CI	0.2	0.6	0.5	0.2	0.0	0.2	0.5	0.5	0.3	0.4	1.5	1.6	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
A1	85.0	77.4	7.6	7.0	0.5	88.2	89.8	90.9	6.9	85.1	12.0	11.5	1.2	23	23	26	27
A2	85.6	78.9	6.7	6.2	0.4	88.8	91.0	92.3	6.1	85.4	12.0	11.5	1.3	23	26	23	27
A4	84.3	77.1	7.2	6.5	0.4	87.4	89.2	90.3	6.5	84.2	12.5	12.0	1.1	23	23	26	27
A5	84.2	76.8	7.4	6.8	0.5	87.7	89.6	90.6	6.8	84.5	12.0	11.0	1.1	23	23	26	27
A6	84.4	77.2	7.3	6.7	0.4	87.7	89.7	90.9	6.7	84.3	12.0	10.5	1.3	23	23	26	27
A7	84.2	76.5	7.7	7.4	0.5	87.6	89.2	90.5	6.8	84.0	11.0	11.0	1.4	23	23	26	27
A8	84.0	76.8	7.2	6.8	0.5	87.3	89.3	90.6	6.5	83.8	11.5	11.0	1.4	23	23	26	27
Avg.	84.5	77.2	7.3	6.8	0.5	87.8	89.7	90.9	6.6	84.5	11.9	11.2	1.3	-	-	-	-
Std Dv	0.5	0.8	0.3	0.4	0.0	0.5	0.6	0.6	0.2	0.6	0.5	0.5	0.1	-	-	-	-
90% CI	0.4	0.6	0.2	0.3	0.0	0.4	0.5	0.5	0.2	0.4	0.3	0.4	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh																	
I22	83.3	75.1	8.2	7.1	0.5	86.1	87.5	88.2	7.0	83.2	14.0	13.5	0.7	26	26	23	22
I24	82.8	74.7	8.1	7.1	0.5	85.6	86.9	87.6	7.2	82.1	14.0	13.0	0.6	23	26	23	27
I25	82.8	74.6	8.1	7.2	0.5	86.1	87.6	88.8	6.8	82.7	13.5	12.0	1.2	23	23	26	35
I26	83.4	74.8	8.6	7.4	0.5	86.2	87.1	87.7	7.4	82.7	14.5	14.0	0.6	23	26	23	27
Avg.	83.1	74.8	8.3	7.2	0.5	86.0	87.2	88.1	7.1	82.7	14.0	13.1	0.8	-	-	-	-
Std Dv	0.3	0.2	0.2	0.1	0.0	0.3	0.3	0.5	0.3	0.5	0.4	0.9	0.3	-	-	-	-
90% CI	0.4	0.3	0.3	0.2	0.0	0.3	0.4	0.6	0.3	0.5	0.5	1.0	0.4	-	-	-	-
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh																	
J27	83.1	74.8	8.4	7.1	0.5	85.8	86.9	87.9	6.9	83.4	15.0	14.0	1.1	23	26	23	25
J28	83.3	75.7	7.6	6.4	0.4	86.4	87.8	88.8	6.4	83.7	15.5	15.0	0.9	18	26	23	27
J29	84.5	76.1	8.4	7.2	0.5	87.0	88.1	89.1	7.0	84.5	15.0	13.5	1.0	23	23	26	25
J30	82.9	75.0	7.9	6.9	0.4	85.7	86.1	87.4	7.2	83.1	14.0	14.0	1.3	27	24	27	25
J31	83.7	75.3	8.4	7.5	0.5	86.4	87.5	88.5	7.0	84.4	13.5	13.5	1.1	23	23	26	27
Avg.	83.5	75.4	8.1	7.0	0.4	86.3	87.3	88.3	6.9	83.8	14.6	14.0	1.1	-	-	-	-
Std Dv	0.6	0.5	0.4	0.4	0.1	0.5	0.8	0.7	0.3	0.6	0.8	0.6	0.1	-	-	-	-
90% CI	0.6	0.5	0.4	0.4	0.0	0.5	0.8	0.6	0.3	0.6	0.8	0.6	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.13

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CC10	90.4	81.7	8.7	7.4	0.5	93.1	93.9	94.9	7.0	91.0	15.0	14.5	1.0	28	25	24	22
CC12	90.1	83.3	6.7	6.1	0.4	92.9	95.3	96.2	6.0	91.3	13.0	13.0	1.0	25	25	24	26
CC14	87.8	81.1	6.8	5.9	0.3	90.9	92.9	94.0	6.1	89.6	14.0	13.5	1.1	25	25	26	24
CC16	88.9	81.7	7.1	6.3	0.4	91.6	93.6	94.3	6.4	90.7	13.5	14.0	0.7	25	25	24	26
CC18	92.4	84.4	8.0	7.1	0.5	94.9	96.2	97.0	7.1	93.4	13.5	13.0	1.0	25	25	27	26
CC20	90.1	82.0	8.1	6.9	0.4	92.9	94.0	94.7	7.1	91.1	14.5	14.0	0.7	25	25	24	26
CC22	91.2	83.3	7.9	6.5	0.4	93.8	94.8	95.3	7.0	92.0	16.0	16.5	0.5	25	25	23	22
CC24	90.3	82.0	8.3	6.9	0.4	92.9	93.6	94.7	7.1	90.3	16.0	14.5	1.1	25	25	26	24
Avg.	90.1	82.4	7.7	6.6	0.4	92.9	94.3	95.1	6.7	91.2	14.4	14.1	0.9	-	-	-	-
Std Dv	1.4	1.1	0.7	0.5	0.1	1.2	1.1	1.0	0.5	1.1	1.1	1.1	0.2	-	-	-	-
90% CI	0.9	0.7	0.5	0.4	0.0	0.8	0.7	0.7	0.3	0.8	0.8	0.8	0.2	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CZ31	91.2	82.9	8.3	6.4	0.3	93.7	94.3	95.0	6.7	91.5	19.5	20.0	0.7	25	25	22	23
CZ33	89.9	80.5	9.4	7.2	0.4	92.7	92.8	93.6	7.0	90.3	20.0	19.5	0.8	24	24	25	26
CZ35	91.1	81.8	9.2	7.5	0.5	93.7	93.2	94.3	7.5	90.9	17.0	18.0	1.0	25	25	26	27
CZ37	89.0	81.4	7.7	5.9	0.3	91.9	93.3	94.2	6.0	90.3	19.5	19.0	0.9	25	25	24	26
CZ39	90.5	82.6	7.9	6.3	0.3	92.9	94.0	94.8	6.5	90.8	18.0	18.5	0.8	25	25	23	26
Avg.	90.3	81.8	8.5	6.7	0.4	93.0	93.5	94.4	6.7	90.7	18.8	19.0	0.9	-	-	-	-
Std Dv	0.9	0.9	0.8	0.7	0.1	0.8	0.6	0.5	0.6	0.5	1.3	0.8	0.1	-	-	-	-
90% CI	0.8	0.9	0.8	0.6	0.1	0.7	0.6	0.5	0.6	0.5	1.2	0.8	0.1	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
K41	91.2	82.6	8.5	6.9	0.4	94.1	94.7	95.7	6.9	91.7	17.0	16.5	1.0	24	24	26	21
K42	89.7	81.5	8.2	6.2	0.3	92.5	93.1	94.0	6.5	89.8	20.5	20.5	0.9	25	25	24	27
K43	89.8	81.1	8.7	6.7	0.4	92.6	92.4	93.2	7.2	90.6	20.0	20.5	0.8	25	25	23	22
K45	91.3	82.7	8.6	7.3	0.5	93.9	93.8	94.4	7.8	91.7	15.5	16.5	0.7	21	25	21	22
K46	91.3	83.2	8.0	6.6	0.4	93.7	94.3	95.0	7.0	92.4	16.5	17.5	0.7	25	25	23	27
Avg.	90.6	82.2	8.4	6.7	0.4	93.4	93.7	94.5	7.1	91.2	17.9	18.3	0.8	-	-	-	-
Std Dv	0.8	0.9	0.3	0.4	0.1	0.7	0.9	0.9	0.5	1.0	2.2	2.0	0.1	-	-	-	-
90% CI	0.8	0.9	0.3	0.4	0.1	0.7	0.9	0.9	0.4	1.0	2.1	2.0	0.1	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
KK52	88.1	80.0	8.2	7.2	0.5	91.2	92.1	92.6	7.3	89.9	13.5	15.0	0.5	28	25	23	22
KK53	92.0	83.9	8.0	6.7	0.4	94.7	95.9	96.5	6.8	93.8	15.5	16.0	0.6	21	25	24	22
KK54	90.2	82.6	7.6	6.4	0.4	93.0	93.8	94.9	6.7	90.2	15.5	16.0	1.1	25	25	26	23
KK55	88.2	78.0	10.2	7.4	0.4	91.0	90.2	91.0	7.3	88.8	23.5	23.0	0.8	24	24	25	21
KK56	87.8	78.3	9.5	7.0	0.4	90.7	90.0	90.7	7.2	88.3	23.0	24.0	0.8	24	24	25	26
KK57	90.7	81.8	8.9	7.0	0.4	93.3	93.6	94.4	7.4	91.4	18.5	16.0	0.9	25	25	26	23
Avg.	89.5	80.8	8.7	7.0	0.4	92.3	92.6	93.4	7.1	90.4	18.2	18.3	0.8	-	-	-	-
Std Dv	1.7	2.4	1.0	0.4	0.0	1.6	2.3	2.3	0.3	2.0	4.2	4.0	0.2	-	-	-	-
90% CI	1.4	2.0	0.8	0.3	0.0	1.3	1.9	1.9	0.3	1.6	3.4	3.3	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.14

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
M47	89.9	82.6	7.3	6.9	0.5	93.1	95.3	95.9	6.8	93.4	11.5	11.5	0.6	22	22	25	24
M48	85.5	76.3	9.1	7.0	0.4	88.6	88.4	89.8	7.2	89.2	20.5	17.0	1.6	23	23	26	27
M49	85.9	76.9	9.0	7.3	0.5	89.0	90.1	90.7	6.9	89.4	17.0	16.0	0.6	24	24	25	22
M50	84.1	73.4	10.7	7.2	0.4	87.0	86.3	87.1	7.0	86.3	30.0	26.0	0.9	24	24	26	25
M51	86.9	77.1	9.8	6.6	0.3	89.9	90.0	90.8	6.2	88.9	30.0	29.5	0.9	24	24	25	26
Avg.	86.4	77.3	9.2	7.0	0.4	89.5	90.0	90.9	6.8	89.4	21.8	20.0	0.9	-	-	-	-
Std Dv	2.2	3.3	1.2	0.3	0.1	2.3	3.3	3.2	0.4	2.6	8.1	7.5	0.4	-	-	.	-
90% CI	2.1	3.2	1.2	0.3	0.1	2.2	3.2	3.0	0.4	2.5	7.8	7.1	0.4	-	-	-	-
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
MM58	86.0	76.8	9.2	7.5	0.5	89.2	89.4	90.2	7.3	89.8	17.0	17.0	1.0	23	23	26	27
MM59	85.3	75.8	9.6	7.4	0.5	88.6	88.6	89.4	7.1	87.4	19.5	19.0	0.9	22	24	22	25
MM60	86.9	76.8	10.1	7.3	0.4	89.9	89.9	90.6	7.4	88.4	24.5	18.5	0.7	22	22	23	25
MM61	85.5	74.4	11.0	7.1	0.3	88.6	87.2	87.9	6.9	87.5	36.5	35.0	0.7	24	24	22	26
MM62	84.6	73.5	11.0	7.3	0.4	87.6	86.2	87.1	7.0	86.1	32.0	31.5	1.0	22	24	22	25
Avg.	85.6	75.5	10.2	7.3	0.4	88.8	88.2	89.1	7.1	87.8	25.9	24.2	0.8	-	-	-	-
Std Dv	0.9	1.4	0.8	0.2	0.1	0.9	1.5	1.5	0.2	1.3	8.2	8.4	0.1	-	-	-	-
90% CI	0.8	1.4	0.8	0.2	0.1	0.8	1.5	1.4	0.2	1.3	7.9	8.0	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BB11	86.2	77.6	8.5	7.1	0.4	89.8	89.9	91.7	7.1	83.7	16.0	14.0	1.8	22	22	34	35
BB13	86.7	77.2	9.5	7.4	0.5	90.5	89.5	91.1	7.5	83.6	19.5	18.0	1.9	22	22	35	34
BB15	84.3	73.7	10.6	7.7	0.5	87.9	86.9	89.0	7.0	82.0	23.5	18.5	2.1	19	22	24	35
BB17	86.1	76.1	10.0	7.4	0.4	89.3	88.6	90.5	6.8	82.8	22.5	20.0	1.9	19	22	35	34
BB19	84.5	75.2	9.3	7.2	0.4	88.2	87.4	89.5	6.9	82.2	20.0	18.5	2.1	19	22	24	35
BB23	85.3	75.2	10.1	7.6	0.5	88.7	88.1	90.4	6.6	82.1	21.5	18.5	2.4	19	22	24	34
BB25	84.1	74.5	9.6	7.3	0.4	87.7	87.4	89.4	6.9	82.2	20.5	16.0	1.9	22	22	35	34
Avg.	85.3	75.6	9.7	7.4	0.5	88.9	88.2	90.2	7.0	82.7	20.5	17.6	2.0	-	-	-	-
Std Dv	1.0	1.4	0.6	0.2	0.0	1.0	1.1	1.0	0.3	0.7	2.4	2.0	0.2	-	-	-	-
90% CI	0.8	1.0	0.5	0.2	0.0	0.8	0.8	0.7	0.2	0.5	1.8	1.5	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BZ32	83.9	74.3	9.6	7.0	0.4	87.2	86.3	88.5	7.1	81.5	24.0	17.5	2.2	22	22	24	32
BZ34	84.5	74.8	9.7	6.9	0.4	87.9	86.8	88.6	7.2	81.3	24.5	19.5	2.0	22	22	35	34
BZ36	84.4	74.1	10.3	7.2	0.4	87.7	86.6	88.7	7.0	81.8	26.5	19.5	2.1	22	22	24	26
BZ38	84.3	73.9	10.4	6.8	0.3	87.8	87.4	89.6	6.6	82.4	34.0	17.0	2.2	22	22	25	35
BZ40	83.2	73.7	9.5	7.4	0.5	87.3	86.9	88.9	6.8	82.1	19.5	17.0	2.0	22	22	35	34
Avg.	84.0	74.2	9.9	7.1	0.4	87.6	86.8	88.9	6.9	81.8	25.7	18.1	2.1	-	-	-	-
Std Dv	0.5	0.4	0.4	0.2	0.0	0.3	0.4	0.5	0.2	0.4	5.3	1.3	0.1	-	-	-	-
90% CI	0.5	0.4	0.4	0.2	0.0	0.3	0.4	0.4	0.2	0.4	5.1	1.2	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.15

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/ 4/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	85.0	77.2	7.9	6.9	0.4	88.4	89.9	91.0	6.9	85.7	14.0	12.0	1.2	23	23	26	27
AA3	85.9	77.8	8.1	7.1	0.5	89.3	90.7	91.8	6.7	86.0	13.5	13.0	1.4	23	23	26	27
AA5	84.9	76.9	7.9	6.4	0.4	87.9	89.1	90.2	6.3	84.6	17.5	16.5	1.1	23	26	23	27
AA6	84.9	78.2	6.7	6.2	0.4	88.1	90.2	91.3	6.4	85.0	12.0	12.0	0.9	23	26	23	27
AA7	84.4	77.0	7.5	6.4	0.4	87.8	89.8	91.0	6.3	84.4	14.5	12.0	1.2	23	23	26	27
AA8	84.6	77.5	7.1	6.6	0.4	87.9	89.9	90.9	6.5	85.5	12.0	12.0	1.1	23	23	26	27
Avg.	84.9	77.4	7.5	6.6	0.4	88.2	89.9	91.0	6.5	85.2	13.9	12.9	1.1	-	-	-	-
Std Dv	0.5	0.5	0.5	0.3	0.0	0.5	0.5	0.5	0.2	0.6	2.0	1.8	0.1	-	-	-	-
90% CI	0.4	0.4	0.4	0.3	0.0	0.4	0.4	0.4	0.2	0.5	1.7	1.5	0.1	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	84.1	76.4	7.7	6.9	0.5	87.7	89.1	90.2	6.9	84.6	13.0	12.5	1.1	23	23	26	22
AZ28	84.2	77.2	7.0	6.7	0.5	87.5	89.6	90.8	6.7	85.1	11.0	10.0	1.2	23	23	26	27
AZ29	84.1	76.9	7.1	6.4	0.4	87.5	89.8	91.1	6.0	84.7	13.0	11.5	1.4	23	23	26	27
AZ30	83.7	75.8	7.9	7.0	0.5	87.1	88.6	89.4	6.9	84.1	13.5	13.0	1.1	23	23	26	27
Avg.	84.0	76.6	7.4	6.8	0.4	87.5	89.3	90.4	6.6	84.6	12.6	11.7	1.2	-	-	-	-
Std Dv	0.2	0.6	0.4	0.3	0.0	0.2	0.5	0.8	0.4	0.4	1.1	1.3	0.1	-	-	-	-
90% CI	0.3	0.7	0.5	0.3	0.0	0.3	0.6	0.9	0.5	0.5	1.3	1.6	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.16

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 1G CENTERLINE-CENTER (FLUSH) AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CC10	92.7	83.9	8.8	7.5	0.5	95.4	96.4	97.1	7.3	93.8	14.5	14.0	0.7	19	25	24	26
CC12	92.3	84.9	7.4	6.6	0.4	95.1	96.9	97.6	6.6	93.4	13.5	14.0	0.6	19	25	24	26
CC14	90.7	84.0	6.7	5.9	0.3	93.6	95.7	96.5	6.1	93.0	13.5	14.5	0.8	19	25	26	24
CC16	92.2	84.7	7.5	6.5	0.4	94.9	96.9	97.5	6.5	94.3	14.0	14.0	0.6	19	24	25	27
CC18		----------		NO DATA		----------											
CC20	93.1	84.7	8.4	7.0	0.4	95.8	97.2	97.4	7.2	94.8	15.5	14.5	0.4	21	24	25	23
CC22	94.1	86.2	7.8	6.6	0.4	97.1	98.4	99.3	6.7	95.4	15.5	14.5	0.9	18	24	23	25
CC24	92.9	84.6	8.2	7.0	0.4	95.3	96.3	96.8	7.2	93.8	15.0	15.5	0.5	25	25	24	26
Avg.	92.6	84.7	7.8	6.7	0.4	95.3	96.8	97.4	6.8	94.1	14.5	14.4	0.6	-	-	-	-
Std Dv	1.0	0.8	0.7	0.5	0.1	1.0	0.8	0.9	0.4	0.8	0.9	0.5	0.2	-	-	-	-
90% CI	0.8	0.6	0.5	0.4	0.0	0.8	0.6	0.7	0.3	0.6	0.6	0.4	0.1	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CZ31	93.6	85.7	7.9	6.3	0.3	96.1	97.1	97.9	6.7	93.5	18.0	16.5	0.8	18	24	25	23
CZ33	92.4	83.4	9.0	7.4	0.5	94.9	95.9	95.9	7.4	93.0	16.5	16.0	-	35	24	25	23
CZ35	93.6	84.7	8.9	7.3	0.5	96.0	96.0	96.1	8.0	93.3	16.5	17.0	0.0	25	25	26	24
CZ37	92.0	83.9	8.1	6.3	0.3	94.8	96.2	96.9	6.1	93.0	19.0	19.0	0.7	19	24	25	23
CZ39	93.3	85.8	7.5	6.2	0.3	95.6	97.4	97.5	6.7	93.4	16.5	16.5	0.0	36	25	24	26
Avg.	93.0	84.7	8.3	6.7	0.4	95.5	96.5	96.9	7.0	93.3	17.3	17.0	0.3	-	-	-	-
Std Dv	0.7	1.1	0.7	0.6	0.1	0.6	0.7	0.9	0.7	0.2	1.2	1.2	0.4	-	-	-	-
90% CI	0.7	1.0	0.6	0.6	0.1	0.6	0.6	0.8	0.7	0.2	1.1	1.1	0.4	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
K41	94.2	85.9	8.2	7.1	0.5	96.8	98.3	98.7	7.1	95.1	14.5	14.0	0.5	18	24	23	26
K42	92.5	84.1	8.4	6.5	0.3	94.7	95.7	96.5	6.7	92.5	20.0	17.0	0.7	27	25	24	27
K43	92.1	83.2	8.9	7.0	0.4	95.0	95.3	95.8	7.2	93.1	19.0	18.5	0.6	18	24	25	23
K45	94.1	85.5	8.6	7.4	0.5	96.3	96.5	96.5	8.1	94.3	14.5	16.0	-	35	24	25	22
K46	94.2	85.8	8.4	7.0	0.4	96.6	97.3	97.4	7.4	95.0	16.0	17.5	0.1	37	24	25	27
Avg.	93.4	84.9	8.5	7.0	0.4	95.9	96.6	97.0	7.3	94.0	16.8	16.6	0.4	-	-	-	-
Std Dv	1.0	1.2	0.3	0.3	0.1	1.0	1.2	1.1	0.5	1.2	2.6	1.7	0.3	-	-	-	-
90% CI	1.0	1.1	0.3	0.3	0.1	0.9	1.2	1.1	0.5	1.1	2.4	1.6	0.3	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
KK52	90.7	82.3	8.3	7.3	0.5	93.9	95.0	95.1	7.5	92.6	14.0	15.0	0.1	28	23	24	26
KK53	94.4	86.7	7.7	6.7	0.4	96.8	98.9	98.9	6.8	96.1	14.5	14.5	-	30	25	26	24
KK54	92.8	85.0	7.8	6.6	0.4	95.4	96.4	97.0	7.0	92.8	15.5	16.0	0.5	19	25	26	24
KK55	91.0	81.3	9.6	7.1	0.4	93.7	93.6	93.8	7.4	91.9	22.5	22.0	0.6	19	26	25	24
KK56	90.3	81.0	9.3	7.0	0.4	93.1	93.2	93.7	7.5	91.5	21.5	18.5	0.7	19	24	25	26
KK57	93.3	84.3	9.0	7.2	0.5	95.7	96.9	96.9	7.4	94.5	17.5	15.5	-	35	24	23	26
Avg.	92.1	83.4	8.6	7.0	0.4	94.8	95.7	95.9	7.2	93.3	17.6	16.9	0.3	-	-	-	-
Std Dv	1.7	2.3	0.8	0.3	0.0	1.4	2.2	2.1	0.3	1.7	3.6	2.9	0.3	-	-	-	-
90% CI	1.4	1.9	0.6	0.2	0.0	1.2	1.8	1.7	0.2	1.4	3.0	2.3	0.3	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4 SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.17

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/15/85

SITE: 1G CENTERLINE-CENTER (FLUSH) AUG. 28,1984

APPROACH -- BELL QUIET TYPE (SEE TEXT)

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
M47	92.7	85.7	7.0	6.7	0.5	95.6	98.8	98.8	6.6	96.3	11.0	11.0	-	35	23	25	22
M48	88.7	79.1	9.5	6.8	0.4	91.9	91.6	92.6	6.7	91.8	25.0	24.5	1.0	23	23	26	27
M49	89.9	79.6	10.3	6.6	0.3	-	93.1	93.3	-	92.0	35.5	-	0.2	35	24	23	25
M50	87.1	76.5	10.7	7.3	0.4	90.2	89.7	90.0	7.2	89.0	29.5	26.0	0.4	24	24	26	25
M51	89.7	80.4	9.3	6.4	0.3	92.6	93.8	94.4	6.5	92.3	28.0	18.5	0.7	19	24	25	26
Avg.	89.6	80.3	9.4	6.8	0.4	92.6	93.4	93.8	6.7	92.3	25.8	20.0	0.4	-	-	-	-
Std Dv	2.0	3.4	1.4	0.3	0.1	2.3	3.4	3.2	0.3	2.6	9.1	6.8	0.4	-	-	-	-
90% CI	1.9	3.2	1.4	0.3	0.1	2.7	3.2	3.1	0.4	2.5	8.7	8.0	0.4	-	-	-	-

APPROACH -- BELL QUIET TYPE (SEE TEXT)

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
MM58	88.9	79.7	9.2	7.2	0.4	91.9	92.7	93.5	7.0	92.4	19.0	16.0	0.8	23	23	26	24
MM59	88.3	78.8	9.5	7.4	0.5	91.5	91.8	92.3	7.3	90.6	19.0	18.0	0.5	19	24	22	25
MM60	89.5	79.9	9.6	7.0	0.4	92.7	93.6	93.6	7.2	92.0	23.0	18.0	-	35	23	22	24
MM61	88.0	77.5	10.5	6.9	0.3	91.2	90.9	90.9	6.7	90.6	34.0	33.0	-	35	24	26	25
MM62	87.6	76.6	11.0	7.1	0.4	90.5	89.7	90.4	6.6	89.8	35.5	34.5	0.6	22	24	25	26
Avg.	88.4	78.5	10.0	7.1	0.4	91.5	91.8	92.1	7.0	91.1	26.1	23.9	0.4	-	-	-	-
Std Dv	0.7	1.4	0.8	0.2	0.1	0.8	1.5	1.5	0.3	1.1	8.1	9.0	0.4	-	-	-	-
90% CI	0.7	1.3	0.7	0.2	0.1	0.8	1.4	1.4	0.3	1.0	7.7	8.6	0.3	-	-	-	-

TAKEOFF -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
BB11	89.3	80.7	8.6	7.2	0.5	93.8	93.7	95.6	7.1	87.5	15.5	14.5	2.0	19	34	35	33
BB13	89.6	80.0	9.6	7.5	0.5	94.0	92.8	95.2	7.2	88.0	18.5	16.5	2.5	19	22	35	34
BB15	87.4	77.3	10.1	7.6	0.5	91.7	90.3	92.7	7.1	85.8	21.0	18.0	2.4	19	22	24	34
BB17	88.8	79.2	9.6	7.3	0.4	92.8	92.2	94.1	7.1	86.1	20.5	17.0	2.1	22	34	35	33
BB19	87.5	78.0	9.5	7.3	0.4	91.9	91.1	93.0	7.3	85.5	20.0	16.5	2.6	19	22	34	35
BB23	88.3	78.6	9.7	7.4	0.5	92.5	91.1	93.8	6.9	85.6	20.5	18.0	2.7	19	34	22	35
BB25		----------		NO DATA		----------											
Avg.	88.5	79.0	9.5	7.4	0.5	92.8	91.9	94.1	7.1	86.4	19.3	16.7	2.4	-	-	-	-
Std Dv	0.9	1.3	0.5	0.2	0.0	1.0	1.2	1.2	0.1	1.1	2.1	1.3	0.3	-	-	-	-
90% CI	0.7	1.0	0.4	0.1	0.0	0.8	1.0	1.0	0.1	0.9	1.7	1.1	0.2	-	-	-	-

TAKEOFF -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
BZ32	86.4	77.1	9.3	7.3	0.4	90.5	89.5	91.7	7.4	84.4	19.0	15.5	2.6	19	22	24	34
BZ34	86.9	77.2	9.7	7.1	0.4	90.6	89.4	91.6	7.1	84.0	23.0	18.5	2.4	19	22	35	34
BZ36	87.1	76.7	10.3	7.3	0.4	90.6	89.5	92.0	7.1	84.5	25.5	16.5	2.4	19	22	24	35
BZ38	86.5	76.7	9.8	7.5	0.5	90.9	90.1	92.6	7.0	85.0	20.5	15.5	2.5	19	22	35	34
BZ40	85.9	76.4	9.5	7.2	0.4	90.5	89.5	91.8	7.1	84.8	21.0	17.0	2.3	19	22	24	35
Avg.	86.5	76.8	9.7	7.3	0.4	90.6	89.6	91.9	7.1	84.5	21.8	16.6	2.4	-	-	-	-
Std Dv	0.4	0.3	0.4	0.1	0.0	0.1	0.3	0.4	0.1	0.4	2.5	1.2	0.1	-	-	-	-
90% CI	0.4	0.3	0.4	0.1	0.0	0.1	0.3	0.4	0.1	0.4	2.4	1.2	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.31

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 1 CENTERLI[illegible] CENTER AUG. 29,1984

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
CY2	89.9	82.3	7.5	6.9	0.5	92.8	94.4	95.6	6.7	91.0	12.5	12.0	1.1	25	25	26	24
CY4	90.1	81.3	8.8	7.4	0.5	92.9	93.3	94.1	7.3	91.2	15.5	16.0	0.8	22	24	22	25
CY6	90.5	82.0	8.5	7.2	0.5	93.3	94.0	94.8	7.3	90.8	15.0	15.0	0.8	25	25	23	26
CY8	90.7	82.2	8.5	7.1	0.5	93.6	93.9	94.7	7.5	92.2	15.5	15.5	0.8	25	25	23	22
CY10	91.4	81.9	9.5	7.5	0.5	94.3	94.2	94.9	7.4	92.5	18.5	18.5	0.7	25	25	24	26
CY12	89.3	82.2	7.0	6.1	0.3	92.2	93.8	94.6	6.3	91.1	14.5	15.5	0.9	27	25	27	24
CY14	90.6	82.5	8.1	6.6	0.4	93.4	94.2	95.0	6.8	91.7	17.0	17.0	0.8	25	25	26	23
CY16	91.0	83.5	7.4	6.2	0.4	93.7	94.7	95.6	6.6	92.0	15.5	17.0	0.9	27	25	27	23
CY18	91.0	83.6	7.4	5.9	0.3	93.6	95.4	96.2	5.9	92.2	17.5	17.5	0.8	25	25	27	23
Avg.	90.5	82.4	8.1	6.8	0.4	93.3	94.2	95.1	6.9	91.6	15.7	16.0	0.8	-	-	-	-
Std Dv	0.7	0.7	0.8	0.6	0.1	0.6	0.6	0.6	0.5	0.6	1.8	1.9	0.1	-	-	-	-
90% CI	0.4	0.5	0.5	0.4	0.0	0.4	0.4	0.4	0.3	0.4	1.1	1.2	0.1	-	-	-	-

TAKEOFF -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
BY3	86.0	76.6	9.5	7.2	0.4	89.3	88.9	90.4	7.2	83.3	20.5	17.0	1.4	22	35	34	22
BY5	86.2	76.5	9.7	7.3	0.4	90.0	89.1	90.8	7.2	82.5	21.0	18.5	1.7	22	35	34	33
BY9	86.3	77.5	8.8	6.9	0.4	90.1	90.6	92.8	6.6	85.1	19.0	13.0	2.2	22	22	25	35
BY11	85.5	76.9	8.6	7.0	0.4	89.0	89.2	91.4	6.6	83.4	17.0	14.0	2.2	22	22	35	34
BY13	85.3	76.1	9.2	7.2	0.4	88.9	88.3	90.5	7.1	82.4	19.0	15.5	2.1	22	22	35	34
BY15	86.0	76.2	9.8	7.7	0.5	89.9	89.1	91.3	6.9	83.6	19.0	18.0	2.2	19	22	35	24
BY17	86.6	76.1	10.5	7.7	0.5	90.1	88.5	90.4	7.3	83.0	23.0	21.5	1.9	22	22	35	34
Avg.	86.0	76.6	9.4	7.3	0.4	89.6	89.1	91.1	7.0	83.3	19.8	16.8	2.0	-	-	-	-
Std Dv	0.5	0.5	0.6	0.3	0.0	0.5	0.7	0.9	0.3	0.9	1.9	2.9	0.3	-	-	-	-
90% CI	0.3	0.4	0.5	0.2	0.0	0.4	0.5	0.6	0.2	0.7	1.4	2.1	0.2	-	-	-	-

150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
AY19	84.6	77.9	6.7	6.5	0.4	88.1	90.6	91.8	6.3	85.9	10.5	10.0	1.2	22	24	26	22
AY20	85.3	77.7	7.5	6.5	0.4	88.8	90.6	91.9	6.0	85.4	14.5	13.5	1.4	23	23	26	27
AY21	84.9	78.5	6.5	6.6	0.5	88.5	91.0	92.2	6.6	86.0	9.5	9.0	1.0	22	23	26	24
AY22	84.6	76.7	7.8	6.9	0.4	88.0	89.4	90.7	6.5	85.0	14.0	13.0	1.3	23	23	26	27
AY23	84.1	76.2	7.8	7.4	0.5	87.3	88.5	89.5	7.4	84.3	11.5	11.5	1.1	22	24	23	22
AY24	84.6	77.1	7.5	6.6	0.4	87.8	89.7	90.1	6.7	85.2	14.0	14.5	1.2	23	23	26	27
AY25	84.6	77.3	7.3	6.6	0.4	88.0	89.6	90.5	6.6	85.1	13.0	13.5	0.9	23	26	23	27
AY27	83.8	76.4	7.4	6.6	0.4	87.6	89.1	90.1	6.6	84.2	13.0	13.5	1.2	23	23	26	34
AY28	83.1	75.1	8.0	6.7	0.4	86.6	87.7	89.0	6.6	83.4	15.5	14.0	1.3	23	23	26	27
AY29	83.3	75.6	7.7	6.8	0.4	86.8	88.1	89.1	7.0	83.6	13.5	12.5	0.9	22	23	26	24
AY30	83.4	75.8	7.6	6.0	0.3	86.6	88.5	90.2	5.7	83.2	18.5	13.5	1.7	23	23	26	33
Avg.	84.2	76.8	7.4	6.7	0.4	87.6	89.3	90.5	6.5	84.6	13.4	12.6	1.2	-	-	-	-
Std Dv	0.7	1.0	0.5	0.3	0.1	0.7	1.1	1.1	0.4	1.0	2.4	1.7	0.2	-	-	-	-
90% CI	0.4	0.6	0.3	0.2	0.0	0.4	0.6	0.6	0.2	0.5	1.3	0.9	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.30

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/19/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	85.0	77.6	7.4	6.8	0.5	88.1	89.7	91.0	6.8	84.5	12.0	11.0	1.3	23	26	23	27
AA3	85.3	78.0	7.2	6.2	0.4	88.2	90.4	91.8	6.7	84.8	14.5	9.0	1.4	23	23	26	27
AA5	84.6	77.5	7.1	6.1	0.4	87.7	89.5	90.8	6.0	84.2	14.5	14.5	1.3	23	26	23	27
AA6	84.5	76.8	7.7	7.3	0.5	87.7	89.0	90.2	7.1	84.0	11.5	11.5	1.2	23	23	26	27
AA7	84.2	76.9	7.3	6.4	0.4	87.7	89.6	91.0	6.2	83.9	14.0	12.5	1.3	23	23	26	27
AA8	85.0	77.1	7.9	6.9	0.4	87.7	89.2	90.2	7.1	84.3	14.0	11.5	1.3	23	26	23	27
Avg.	84.8	77.3	7.4	6.6	0.4	87.9	89.6	90.8	6.6	84.3	13.4	11.7	1.3	-	-	-	-
Std Dv	0.4	0.5	0.3	0.4	0.1	0.2	0.5	0.6	0.5	0.3	1.3	1.8	0.1	-	-	-	-
90% CI	0.3	0.4	0.2	0.4	0.1	0.2	0.4	0.5	0.4	0.3	1.1	1.5	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	83.6	76.6	7.0	6.7	0.5	86.9	88.9	90.0	6.6	83.8	11.0	11.0	1.1	23	23	26	27
AZ28	83.7	76.7	7.0	6.7	0.5	87.0	89.1	90.3	6.7	83.9	11.0	10.0	1.2	23	23	26	27
AZ29	83.4	75.8	7.6	6.2	0.3	86.2	88.0	89.3	6.6	83.3	16.5	11.0	1.4	23	26	23	27
AZ30	82.8	74.1	8.7	6.4	0.3	85.4	86.4	87.4	7.4	82.6	22.5	12.0	1.0	23	26	23	35
Avg.	83.4	75.8	7.6	6.5	0.4	86.4	88.1	89.3	6.8	83.4	15.2	11.0	1.2	-	-	-	-
Std Dv	0.4	1.2	0.8	0.2	0.1	0.7	1.2	1.3	0.4	0.6	5.5	0.8	0.2	-	-	-	-
90% CI	0.5	1.4	0.9	0.3	0.1	0.9	1.4	1.6	0.5	0.7	6.5	1.0	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.29

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
M47	91.1	84.7	6.4	6.6	0.5	94.5	97.4	98.1	6.5	95.2	9.5	9.5	0.7	22	22	24	25
M48	85.2	76.4	8.9	7.1	0.4	88.2	88.5	89.7	6.9	88.6	17.5	17.0	1.4	23	23	26	27
M49	87.7	79.8	8.0	7.0	0.5	90.9	92.4	92.6	7.3	91.4	13.5	13.5	0.4	25	22	25	21
M50	85.4	76.1	9.3	6.9	0.4	88.5	89.3	90.3	6.7	88.4	22.0	16.5	1.0	22	22	24	26
M51	88.5	80.1	8.4	7.8	0.6	91.5	92.3	93.3	7.6	91.0	12.0	12.0	1.0	22	22	24	26
Avg.	87.6	79.4	8.2	7.1	0.5	90.7	92.0	92.8	7.0	90.9	14.9	13.7	0.9	-	-	-	-
Std Dv	2.4	3.5	1.1	0.4	0.1	2.6	3.5	3.3	0.4	2.8	4.9	3.1	0.4	-	-	-	-
90% CI	2.3	3.3	1.0	0.4	0.1	2.4	3.3	3.2	0.4	2.7	4.7	3.0	0.3	-	-	-	-
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
MM58	86.8	77.5	9.3	6.9	0.4	89.9	90.0	90.9	6.8	90.3	22.5	21.5	1.4	23	23	26	27
MM59	87.5	78.8	8.7	6.8	0.4	90.6	91.6	92.4	7.0	89.8	18.5	15.0	0.7	24	24	22	25
MM60	90.0	80.9	9.1	7.5	0.5	93.0	93.5	94.2	7.3	91.2	16.5	16.0	0.7	25	22	25	23
MM61	85.9	76.2	9.7	7.6	0.5	89.1	89.3	89.9	7.2	88.6	19.0	19.0	0.6	24	24	22	26
MM62	85.0	75.4	9.5	7.2	0.4	88.0	87.9	88.3	7.4	87.7	21.0	20.5	0.4	24	24	22	26
Avg.	87.0	77.8	9.3	7.2	0.4	90.1	90.5	91.1	7.1	89.5	19.5	18.4	0.8	-	-	-	-
Std Dv	1.9	2.2	0.4	0.3	0.1	1.9	2.2	2.3	0.2	1.4	2.3	2.8	0.4	-	-	-	-
90% CI	1.8	2.1	0.4	0.3	0.1	1.8	2.1	2.2	0.2	1.3	2.2	2.7	0.4	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BB11	86.2	77.6	8.6	7.4	0.5	90.2	91.2	93.2	6.6	85.4	14.5	11.5	2.0	19	22	35	34
BB13	87.9	79.5	8.3	7.2	0.5	91.5	92.0	93.7	7.2	84.9	14.5	12.0	1.7	22	34	35	22
BB15	85.0	75.5	9.6	7.3	0.4	88.7	88.5	90.3	6.8	83.0	20.5	17.0	1.8	22	22	34	35
BB17	87.0	78.6	8.4	7.2	0.5	90.7	91.4	93.4	6.5	85.0	15.0	13.5	1.9	19	22	35	32
BB19	85.3	76.7	8.6	7.1	0.4	89.0	89.4	91.4	6.5	83.7	16.5	14.5	2.0	19	22	24	35
BB23	85.8	76.1	9.8	7.0	0.4	89.3	88.7	90.9	6.7	83.0	25.0	18.5	2.1	19	22	25	35
BB25	85.1	75.9	9.2	7.2	0.4	89.0	88.9	91.0	6.5	83.3	19.0	16.5	2.1	19	22	25	26
Avg.	86.1	77.1	8.9	7.2	0.4	89.8	90.0	92.0	6.7	84.1	17.9	14.8	2.0	-	-	-	-
Std Dv	1.1	1.5	0.6	0.1	0.0	1.0	1.5	1.4	0.3	1.0	3.9	2.6	0.2	-	-	-	-
90% CI	0.8	1.1	0.4	0.1	0.0	0.8	1.1	1.0	0.2	0.8	2.9	1.9	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BZ32	84.9	77.1	7.9	6.7	0.4	88.5	89.5	91.5	6.6	83.8	15.0	11.5	1.9	22	22	34	35
BZ34	85.5	78.0	7.5	6.5	0.4	88.8	90.4	92.3	6.7	84.9	14.0	9.5	1.8	22	22	32	34
BZ36	85.4	77.5	8.0	6.8	0.4	88.8	89.8	91.8	6.3	83.9	14.5	13.0	2.0	22	22	35	34
BZ38	84.9	75.9	9.0	6.8	0.4	88.4	89.1	91.2	6.6	83.5	21.5	12.5	2.1	22	22	25	34
BZ40	84.1	76.0	8.1	7.0	0.4	88.2	88.9	90.9	6.6	83.1	14.5	12.5	2.0	22	22	34	35
Avg.	85.0	76.9	8.1	6.8	0.4	88.5	89.5	91.5	6.6	83.8	15.9	11.8	1.9	-	-	-	-
Std Dv	0.6	0.9	0.6	0.2	0.0	0.3	0.6	0.5	0.1	0.6	3.2	1.4	0.1	-	-	-	-
90% CI	0.5	0.9	0.5	0.2	0.0	0.3	0.6	0.5	0.1	0.6	3.0	1.3	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.28

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/19/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
CC10	90.7	82.6	8.1	6.8	0.4	93.5	94.4	95.5	6.8	91.0	15.5	15.0	1.1	25	25	26	27
CC12	89.9	83.1	6.8	6.5	0.4	92.6	94.6	95.6	6.6	90.8	11.0	11.5	1.0	25	25	26	24
CC14	88.3	80.5	7.7	6.7	0.4	91.3	92.8	93.6	6.8	89.3	14.5	13.5	0.9	25	25	26	24
CC16	89.8	83.0	6.9	5.9	0.3	92.6	95.0	95.9	6.0	91.1	14.5	13.0	1.0	25	25	24	27
CC18	93.2	85.8	7.5	6.5	0.4	95.5	97.5	98.3	6.4	94.3	14.0	13.5	0.8	21	26	25	24
CC20	91.4	83.1	8.3	7.3	0.5	93.9	95.1	95.9	7.0	91.7	13.5	13.5	0.8	25	25	24	26
CC22	89.9	82.5	7.4	6.3	0.4	92.7	94.0	94.8	6.6	90.6	15.0	15.5	0.8	18	25	23	26
CC24	91.4	83.2	8.2	7.3	0.5	94.0	94.6	95.5	7.4	91.2	13.5	14.0	0.9	25	25	26	27
Avg.	90.6	83.0	7.6	6.7	0.4	93.3	94.7	95.7	6.7	91.3	13.9	13.7	0.9	-	-	-	-
Std Dv	1.5	1.4	0.6	0.5	0.1	1.3	1.3	1.3	0.4	1.4	1.4	1.2	0.1	-	-	-	-
90% CI	1.0	1.0	0.4	0.3	0.0	0.8	0.9	0.9	0.3	0.9	0.9	0.8	0.1	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
CZ31	90.8	82.6	8.3	6.8	0.4	93.3	93.7	94.4	7.1	90.4	16.5	17.5	0.7	25	25	27	26
CZ33	90.0	82.9	7.1	6.1	0.4	92.5	94.7	95.7	5.9	90.6	14.5	14.5	1.0	25	25	24	26
CZ35	90.5	83.8	6.7	6.1	0.4	93.1	94.2	95.1	6.8	90.8	13.0	15.5	1.0	27	25	27	26
CZ37	88.7	79.8	8.9	7.1	0.4	91.4	91.5	92.4	7.2	88.9	18.0	18.0	0.9	25	25	26	24
CZ39	91.9	85.1	6.8	5.8	0.3	94.3	95.6	96.1	6.7	91.8	15.0	16.5	0.5	23	25	26	27
Avg.	90.4	82.8	7.6	6.4	0.4	92.9	93.9	94.7	6.7	90.5	15.4	16.4	0.8	-	-	-	-
Std Dv	1.2	2.0	1.0	0.6	0.0	1.0	1.5	1.4	0.5	1.1	1.9	1.4	0.2	-	-	-	-
90% CI	1.1	1.9	0.9	0.5	0.0	1.0	1.5	1.4	0.5	1.0	1.8	1.4	0.2	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts.

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
K41	91.9	84.0	7.9	6.8	0.4	94.7	95.1	96.1	7.2	93.1	14.5	16.0	0.9	25	25	27	26
K42	90.1	82.4	7.7	6.9	0.5	92.7	94.4	95.3	6.6	90.3	13.0	13.5	0.9	25	25	24	26
K43	92.1	84.4	7.8	6.6	0.4	94.3	95.6	96.3	6.8	91.6	15.0	15.5	0.7	25	25	27	23
K45	91.6	83.1	8.5	7.1	0.5	93.9	94.7	95.5	7.0	91.2	15.5	16.0	0.8	25	25	26	23
K46	91.8	84.8	7.0	5.8	0.3	94.1	95.7	96.5	6.3	91.4	16.0	16.5	0.7	25	25	27	26
Avg.	91.5	83.7	7.8	6.6	0.4	94.0	95.1	95.9	6.7	91.5	14.8	15.5	0.8	-	-	-	-
Std Dv	0.8	1.0	0.5	0.5	0.1	0.7	0.6	0.5	0.4	1.0	1.2	1.2	0.1	-	-	-	-
90% CI	0.8	0.9	0.5	0.5	0.1	0.7	0.5	0.5	0.3	1.0	1.1	1.1	0.1	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts.

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
KK52	90.6	83.1	7.5	6.9	0.5	93.6	95.2	96.4	6.7	91.8	12.5	12.0	1.1	28	25	26	24
KK53	92.3	84.2	8.1	6.8	0.4	94.7	96.1	96.9	6.7	93.3	15.5	15.0	0.8	20	25	26	27
KK54	89.9	82.9	7.0	6.4	0.4	92.8	94.8	95.8	6.4	91.7	12.5	12.5	1.0	25	25	26	23
KK55	90.0	81.7	8.3	6.6	0.4	92.6	93.9	94.6	7.1	91.6	18.5	13.5	0.7	22	25	22	24
KK56	89.4	82.0	7.4	6.8	0.5	92.4	94.2	95.1	6.8	90.8	12.0	12.0	0.9	25	25	24	26
KK57	91.9	83.5	8.4	7.0	0.4	94.5	95.2	95.8	7.2	93.0	16.0	16.0	0.6	21	22	24	25
Avg.	90.7	82.9	7.8	6.7	0.4	93.4	94.9	95.8	6.8	92.1	14.5	13.5	0.9	-	-	-	-
Std Dv	1.2	0.9	0.6	0.2	0.0	1.0	0.8	0.8	0.3	1.0	2.6	1.7	0.2	-	-	-	-
90% CI	1.0	0.8	0.5	0.2	0.0	0.8	0.6	0.7	0.2	0.8	2.1	1.4	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.27

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/19/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	85.5	78.1	7.4	7.1	0.5	88.8	90.4	91.7	7.0	85.3	11.0	10.5	1.4	22	24	22	26
AA3	85.2	77.2	8.0	7.1	0.5	88.3	89.4	90.4	7.1	84.7	13.0	13.0	1.1	23	26	23	27
AA5	85.6	77.4	8.1	7.0	0.4	88.5	89.4	90.5	6.9	85.0	14.5	14.5	1.1	23	26	23	27
AA6	84.7	77.5	7.2	6.7	0.4	87.9	89.5	90.6	7.0	84.4	12.0	11.0	1.1	23	26	23	27
AA7	85.4	77.1	8.3	7.1	0.5	88.4	89.8	91.0	6.9	84.8	15.0	11.5	1.2	23	23	26	27
AA8	85.5	78.2	7.2	6.6	0.4	88.3	90.1	91.3	7.4	85.9	12.5	9.0	1.0	23	26	23	27
Avg.	85.3	77.6	7.7	6.9	0.5	88.4	89.8	90.9	7.1	85.0	13.0	11.6	1.2	-	-	-	-
Std Dv	0.3	0.5	0.5	0.2	0.0	0.3	0.4	0.5	0.2	0.5	1.5	1.9	0.1	-	-	-	-
90% CI	0.3	0.4	0.4	0.2	0.0	0.3	0.4	0.4	0.2	0.4	1.2	1.6	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	83.8	76.0	7.8	6.5	0.4	87.1	88.3	89.4	6.5	83.4	16.0	15.5	1.3	23	26	23	27
AZ28	84.0	76.6	7.4	6.8	0.5	87.2	88.9	90.1	6.9	83.5	12.0	11.0	1.2	23	26	23	27
AZ29	83.8	76.1	7.7	6.9	0.5	87.1	88.6	89.8	6.8	83.8	13.0	12.0	1.2	23	23	26	27
AZ30	83.1	75.8	7.3	6.7	0.4	86.5	88.2	89.4	6.9	83.3	12.5	11.0	1.1	23	23	26	27
Avg.	83.7	76.1	7.6	6.7	0.4	87.0	88.5	89.7	6.8	83.5	13.4	12.4	1.2	-	-	-	-
Std Dv	0.4	0.3	0.2	0.2	0.0	0.3	0.3	0.4	0.2	0.2	1.8	2.1	0.0	-	-	-	-
90% CI	0.4	0.4	0.3	0.2	0.0	0.4	0.4	0.4	0.2	0.2	2.1	2.5	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.26

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

EV	SEL	AL*	SEL-AL*	K(A)	Q	EPNL	PNL*	PNLT*	K(P)	OASPL*	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
M47	88.6	81.9	6.7	5.7	0.3	91.5	94.0	94.7	6.0	90.6	14.5	14.0	0.7	23	23	25	26
M48	84.8	75.7	9.1	6.9	0.4	-	87.9	88.7	-	87.5	21.0	-	0.8	20	24	25	26
M49	85.3	75.3	10.0	7.2	0.4	88.4	87.5	88.3	7.2	87.0	25.0	25.5	1.2	23	23	26	27
M50	83.7	72.9	10.8	7.3	0.4	86.6	84.9	86.1	7.2	84.8	30.0	29.5	1.3	23	26	23	27
M51	85.3	74.4	10.9	7.8	0.5	88.3	86.9	87.7	7.6	87.1	25.0	25.0	0.8	24	24	22	26
Avg.	85.5	76.1	9.5	7.0	0.4	88.7	88.2	89.1	7.0	87.4	23.1	23.5	1.0	-	-	-	-
Std Dv	1.8	3.5	1.7	0.8	0.1	2.0	3.4	3.3	0.7	2.1	5.8	6.6	0.3	-	-	-	-
90% CI	1.7	3.3	1.7	0.7	0.1	2.4	3.3	3.1	0.8	2.0	5.5	7.8	0.3	-	-	-	-
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
MM58	85.3	76.3	9.0	7.3	0.5	88.6	88.8	89.8	7.1	88.5	17.0	17.5	1.3	23	23	26	27
MM59	85.8	75.4	10.5	7.2	0.4	88.8	88.0	88.6	7.2	87.5	28.5	25.0	0.6	24	24	25	22
MM60	85.6	75.2	10.4	7.0	0.4	88.6	87.4	88.2	6.9	86.8	31.5	31.5	0.8	22	25	24	26
MM61	85.0	75.5	9.5	6.8	0.4	87.9	87.2	88.1	7.0	86.9	24.5	25.0	0.9	23	26	23	22
MM62	84.7	73.1	11.6	7.8	0.5	-	85.2	86.1	-	85.6	31.0	-	0.9	22	22	25	24
Avg.	85.3	75.1	10.2	7.2	0.4	88.5	87.3	88.2	7.1	87.0	26.5	24.7	0.9	-	-	-	-
Std Dv	0.5	1.2	1.0	0.4	0.1	0.4	1.4	1.3	0.1	1.0	6.0	5.7	0.2	-	-	-	-
90% CI	0.4	1.1	0.9	0.3	0.1	0.4	1.3	1.3	0.1	1.0	5.7	6.7	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BB11	86.2	76.9	9.3	7.1	0.4	89.7	88.9	90.8	7.3	81.9	20.0	16.5	1.9	22	34	33	35
BB13	86.2	76.3	9.9	7.0	0.4	89.8	88.5	90.2	7.3	81.2	25.5	20.5	1.7	22	34	35	33
BB15	84.2	73.5	10.7	[illegible]	0.4	87.8	86.1	88.2	7.2	80.6	27.0	21.5	2.1	22	22	34	33
BB17	85.0	74.9	10.1	7.5	0.5	88.2	87.1	89.2	7.3	81.2	22.0	17.0	2.1	22	22	34	35
BB19	84.2	73.6	10.6	7.6	0.5	87.6	85.8	87.9	7.6	80.0	25.0	19.0	2.0	22	22	34	33
BB23	84.8	75.1	9.8	6.9	0.4	88.1	87.4	89.6	6.6	81.2	26.0	19.5	2.2	22	22	34	35
BB25	83.6	72.9	10.6	7.1	0.4	87.0	85.5	87.3	7.6	79.8	32.0	19.0	1.9	22	35	34	24
Avg.	84.9	74.7	10.1	7.2	0.4	88.3	87.0	89.0	7.3	80.8	25.4	19.0	2.0	-	-	-	-
Std Dv	1.0	1.5	0.5	0.3	0.0	1.0	1.3	1.3	0.3	0.7	3.8	1.8	0.2	-	-	-	-
90% CI	0.7	1.1	0.4	0.2	0.0	0.8	1.0	0.9	0.3	0.5	2.8	1.3	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BZ32	82.8	72.0	10.9	7.2	0.4	85.8	84.3	86.4	7.2	79.1	32.0	20.5	2.1	22	22	24	35
BZ34	83.0	72.8	10.1	7.1	0.4	86.4	84.9	87.2	6.8	79.6	26.5	22.0	2.4	22	22	24	35
BZ36	82.9	72.0	10.9	7.7	0.5	86.4	84.4	86.6	6.9	78.9	26.0	25.5	2.2	22	22	25	34
BZ38	83.0	72.3	10.7	7.3	0.4	86.6	85.5	87.7	6.3	80.1	29.0	25.0	2.2	22	22	35	34
BZ40	82.0	71.4	10.6	7.1	0.4	85.4	84.3	86.5	6.7	79.1	31.5	22.0	2.1	22	22	35	34
Avg.	82.7	72.1	10.7	7.3	0.4	86.1	84.7	86.9	6.8	79.4	29.0	23.0	2.2	-	-	-	-
Std Dv	0.4	0.5	0.3	0.3	0.0	0.5	0.5	0.6	0.3	0.5	2.8	2.2	0.1	-	-	-	-
90% CI	0.4	0.5	0.3	0.2	0.0	0.4	0.5	0.5	0.3	0.5	2.6	2.1	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.25

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CC10	88.7	80.4	8.3	6.9	0.4	91.6	91.9	93.0	7.0	88.4	16.0	16.5	1.1	25	25	26	27
CC12	87.9	78.9	9.0	7.1	0.4	90.8	91.1	92.1	7.0	87.9	18.5	17.5	1.1	28	25	24	26
CC14	86.9	76.3	10.7	7.2	0.4	89.8	89.2	90.3	6.8	87.0	30.0	24.5	1.1	24	24	25	26
CC16	88.2	79.8	8.4	7.1	0.4	90.9	91.6	92.6	7.0	87.8	15.5	15.5	1.0	25	25	24	27
CC18	90.8	83.0	7.8	6.7	0.4	93.4	94.1	95.0	7.1	90.1	14.5	15.0	0.9	25	25	26	27
CC20	89.5	81.1	8.4	6.6	0.4	91.9	92.8	93.6	6.7	89.4	19.0	17.0	0.8	25	25	24	27
CC22	91.3	82.7	8.6	6.8	0.4	93.7	93.8	94.6	7.2	90.1	18.5	18.5	0.8	26	26	25	23
CC24	90.0	81.6	8.4	6.3	0.3	92.4	93.3	94.4	6.1	89.4	21.5	21.0	1.1	28	25	26	24
Avg.	89.2	80.5	8.7	6.8	0.4	91.8	92.2	93.2	6.9	88.8	19.2	18.2	1.0	-	-	-	-
Std Dv	1.5	2.2	0.9	0.3	0.0	1.3	1.6	1.6	0.4	1.2	4.9	3.2	0.1	-	-	-	-
90% CI	1.0	1.5	0.6	0.2	0.0	0.9	1.1	1.0	0.2	0.8	3.3	2.1	0.1	-	-	-	-

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CZ31	90.3	80.7	9.6	7.3	0.4	92.8	91.4	92.1	7.9	89.0	21.0	22.5	0.7	18	23	28	27
CZ33	89.1	79.3	9.8	7.2	0.4	91.8	90.9	91.6	7.3	88.1	23.0	24.0	0.8	25	25	24	23
CZ35	90.0	81.7	8.3	6.9	0.4	92.5	93.3	94.4	6.8	89.1	16.0	15.5	1.1	25	25	26	27
CZ37	89.5	81.1	8.4	6.7	0.4	92.0	92.0	92.9	7.1	89.3	18.0	19.0	0.9	18	25	26	23
CZ39	89.2	80.8	8.4	6.8	0.4	91.6	91.8	92.7	7.1	89.1	17.0	17.5	1.0	20	25	27	23
Avg.	89.6	80.7	8.9	7.0	0.4	92.1	91.9	92.8	7.3	88.9	19.0	19.7	0.9	-	-	-	-
Std Dv	0.5	0.9	0.7	0.2	0.0	0.5	0.9	1.0	0.4	0.5	2.9	3.5	0.2	-	-	-	-
90% CI	0.5	0.8	0.7	0.2	0.0	0.5	0.9	1.0	0.4	0.4	2.8	3.3	0.2	-	-	-	-

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
K41	90.2	81.4	8.7	6.9	0.4	93.0	92.2	93.4	7.3	89.2	18.5	20.5	1.2	27	25	27	23
K42	89.2	79.3	10.0	7.0	0.4	91.8	90.9	91.7	7.1	87.7	27.0	26.5	0.8	27	25	24	27
K43	88.8	79.1	9.7	7.6	0.5	91.5	91.4	91.9	7.6	89.2	19.0	18.5	0.5	21	24	25	21
K45	89.2	79.9	9.3	6.9	0.4	92.1	90.9	91.8	7.6	88.9	22.5	22.5	0.9	27	25	27	23
K46	90.7	81.8	9.0	6.9	0.4	93.4	93.6	94.5	6.8	91.5	20.0	20.5	1.1	20	25	24	22
Avg.	89.6	80.3	9.3	7.0	0.4	92.4	91.8	92.7	7.3	89.3	21.4	21.7	0.9	-	-	-	-
Std Dv	0.8	1.2	0.5	0.3	0.0	0.8	1.1	1.3	0.3	1.4	3.5	3.0	0.3	-	-	-	-
90% CI	0.8	1.2	0.5	0.3	0.0	0.8	1.1	1.2	0.3	1.3	3.3	2.9	0.3	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
KK52	86.1	75.6	10.5	7.1	0.4	89.1	88.0	88.4	7.2	86.7	30.0	30.0	0.6	24	24	25	26
KK53	90.4	81.4	9.0	7.5	0.5	93.1	93.4	94.2	7.5	90.8	16.0	15.5	0.9	22	22	25	24
KK54	90.9	81.6	9.3	7.1	0.4	93.4	92.6	93.4	7.6	88.7	20.0	21.0	0.9	25	25	26	27
KK55	89.6	81.6	8.0	6.5	0.4	92.3	93.4	94.3	6.5	89.6	17.0	16.5	0.9	25	25	26	24
KK56	88.4	78.2	10.2	7.4	0.4	91.0	89.5	90.4	7.7	87.0	23.5	24.0	0.9	26	26	25	23
KK57	89.8	81.6	8.3	5.8	0.3	92.3	93.2	94.3	6.4	89.2	26.5	17.5	1.1	25	25	26	27
Avg.	89.2	80.0	9.2	6.9	0.4	91.9	91.7	92.5	7.2	88.7	22.2	20.7	0.9	-	-	-	-
Std Dv	1.7	2.5	1.0	0.6	0.1	1.6	2.3	2.5	0.5	1.6	5.5	5.5	0.2	-	-	-	-
90% CI	1.4	2.1	0.8	0.5	0.1	1.3	1.9	2.1	0.4	1.3	4.5	4.5	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.24

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/ 4/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	83.8	75.4	8.4	6.9	0.4	87.1	87.4	88.6	7.0	85.4	16.5	16.0	1.2	22	24	23	26
AA3	84.0	74.8	9.3	7.0	0.4	87.4	87.1	88.9	6.6	82.1	21.0	19.5	2.1	20	23	32	33
AA5	83.9	74.7	9.2	6.8	0.4	87.4	88.0	89.7	6.4	83.2	22.5	16.0	1.7	22	23	22	34
AA6	83.4	75.3	8.1	6.7	0.4	86.5	87.4	88.4	6.8	84.1	16.0	16.0	1.0	27	23	27	24
AA7	83.6	74.4	9.2	6.9	0.4	86.9	86.5	88.4	6.6	81.7	21.0	19.0	1.8	22	23	32	33
AA8	83.6	74.9	8.6	7.1	0.4	86.9	87.2	88.7	6.9	84.5	16.5	16.0	1.4	22	24	23	26
Avg.	83.7	74.9	8.8	6.9	0.4	87.0	87.3	88.8	6.7	83.5	18.9	17.1	1.5	-	-	-	-
Std Dv	0.2	0.4	0.5	0.1	0.0	0.3	0.5	0.5	0.2	1.4	2.9	1.7	0.4	-	-	-	-
90% CI	0.2	0.3	0.4	0.1	0.0	0.3	0.4	0.4	0.2	1.2	2.4	1.4	0.3	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	83.3	74.7	8.5	6.6	0.4	87.1	87.8	89.3	6.2	85.6	19.5	17.5	1.5	22	23	34	32
AZ28	82.4	73.4	9.0	7.2	0.4	85.6	85.3	86.1	7.5	87.3	18.0	18.5	1.0	22	24	22	26
AZ29	82.5	73.6	8.9	7.3	0.5	86.6	86.9	88.6	6.7	85.5	16.5	16.0	1.6	22	23	22	24
AZ30	81.6	73.2	8.5	6.9	0.4	85.1	85.5	86.7	7.0	86.2	17.0	16.0	1.2	22	24	35	22
Avg.	82.4	73.7	8.7	7.0	0.4	86.1	86.4	87.7	6.9	86.2	17.7	17.0	1.3	-	-	-	-
Std Dv	0.7	0.7	0.3	0.3	0.0	0.9	1.2	1.5	0.5	0.8	1.3	1.2	0.3	-	-	-	-
90% CI	0.8	0.8	0.3	0.4	0.1	1.1	1.4	1.8	0.6	1.0	1.6	1.4	0.4	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.23

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
M47	82.4	71.9	10.5	7.4	0.4	85.6	83.7	85.1	7.0	80.0	27.0	31.5	2.0	28	34	33	28
M48	80.5	69.8	10.7	7.3	0.4	83.8	81.8	83.2	7.2	81.7	29.5	29.0	1.6	28	23	34	32
M49	81.3	70.1	11.2	7.0	0.3	84.5	81.5	83.0	7.1	80.4	40.0	40.0	1.5	27	34	33	35
M50	81.1	69.0	12.1	7.3	0.4	84.1	80.9	82.1	7.3	80.3	45.0	44.0	1.4	28	34	35	33
M51	81.8	70.7	11.1	6.9	0.3	85.0	82.6	83.9	7.0	81.0	40.0	39.5	1.3	27	34	24	23
Avg.	81.4	70.3	11.1	7.2	0.4	84.6	82.1	83.5	7.1	80.7	36.3	36.8	1.6	-	-	-	-
Std Dv	0.7	1.1	0.6	0.2	0.0	0.7	1.1	1.1	0.1	0.7	7.7	6.3	0.3	-	-	-	-
90% CI	0.7	1.0	0.6	0.2	0.0	0.7	1.0	1.1	0.1	0.6	7.3	6.0	0.3	-	-	-	-
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
MM58	81.1	70.2	10.9	7.8	0.5	-	82.1	83.0	-	81.8	24.5	-	0.9	22	35	34	32
MM59	82.2	69.8	12.4	7.3	0.3	85.6	81.6	83.2	7.3	81.5	51.0	50.5	2.0	28	34	33	35
MM60	82.4	69.8	12.5	7.4	0.4	85.5	82.2	82.9	7.5	80.6	48.5	47.5	0.8	26	34	35	33
MM61	80.5	69.7	10.7	8.1	0.6	-	81.8	82.7	-	80.2	21.5	-	0.9	26	34	35	32
MM62	81.3	68.3	13.0	7.9	0.4	84.5	80.9	81.9	7.7	80.4	45.0	43.5	1.0	23	23	35	26
Avg.	81.5	69.6	11.9	7.7	0.4	85.2	81.7	82.7	7.5	80.9	38.1	47.2	1.1	-	-	-	-
Std Dv	0.8	0.8	1.0	0.3	0.1	0.6	0.5	0.5	0.2	0.7	14.0	3.5	0.5	-	-	-	-
90% CI	0.8	0.7	1.0	0.3	0.1	1.0	0.5	0.5	0.3	0.7	13.3	5.9	0.5	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BB11	84.2	74.3	9.9	7.3	0.4	88.0	87.1	89.6	6.4	81.8	22.5	20.0	2.5	22	24	22	27
BB13	83.8	74.0	9.8	7.1	0.4	87.3	87.2	89.7	6.1	82.2	24.5	17.5	2.6	22	24	22	34
BB15	83.8	73.0	10.8	7.8	0.5	87.5	85.8	88.0	7.0	81.3	24.0	22.5	2.5	22	24	22	26
BB17	83.8	72.8	11.0	7.8	0.5	87.7	86.1	88.6	6.6	81.5	26.0	23.0	2.6	22	24	22	27
BB19	83.7	73.1	10.6	7.3	0.4	87.5	86.1	88.8	6.2	81.0	28.0	25.5	2.6	22	24	22	26
BB23	83.3	72.6	10.7	7.3	0.4	87.0	85.0	87.4	6.9	80.4	29.5	25.0	2.6	22	22	24	34
BB25	83.1	73.2	9.9	6.8	0.4	86.7	86.1	88.8	6.1	81.2	27.5	19.5	2.6	22	24	22	26
Avg.	83.7	73.3	10.4	7.3	0.4	87.4	86.2	88.7	6.5	81.3	26.0	21.9	2.6	-	-	-	-
Std Dv	0.4	0.6	0.5	0.4	0.1	0.4	0.7	0.8	0.4	0.6	2.5	3.0	0.1	-	-	-	-
90% CI	0.3	0.5	0.4	0.3	0.0	0.3	0.5	0.6	0.3	0.4	1.8	2.2	0.0	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BZ32	83.2	72.4	10.7	7.7	0.5	86.8	85.4	87.9	6.6	83.2	25.0	22.5	2.5	22	24	22	34
BZ34	83.7	72.7	11.0	7.8	0.5	87.4	85.9	88.4	6.6	83.4	25.5	23.0	2.5	22	24	22	26
BZ36	83.3	71.7	11.6	8.3	0.6	86.5	84.9	87.4	6.8	82.6	25.0	21.5	2.5	22	24	22	34
BZ38	83.0	71.9	11.1	7.4	0.4	86.4	85.3	87.5	6.6	83.4	31.0	22.0	2.3	22	24	22	34
BZ40	82.7	71.8	10.9	7.7	0.5	86.2	84.7	87.1	6.8	83.3	25.5	21.5	2.5	22	24	22	27
Avg.	83.2	72.1	11.0	7.8	0.5	86.7	85.2	87.7	6.7	83.2	26.4	22.1	2.5	-	-	-	-
Std Dv	0.4	0.4	0.3	0.3	0.1	0.5	0.5	0.5	0.1	0.3	2.6	0.7	0.1	-	-	-	-
90% CI	0.4	0.4	0.3	0.3	0.1	0.5	0.4	0.5	0.1	0.3	2.5	0.6	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

m - TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.22

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
CC10	82.9	72.5	10.4	6.7	0.3	86.3	86.4	87.7	6.8	80.8	36.0	19.0	1.3	23	23	22	26
CC12	82.4	72.2	10.3	6.8	0.3	86.2	85.6	86.9	6.4	80.5	32.5	28.0	1.3	19	23	22	24
CC14		----------		NO DATA		----------											
CC16	81.6	70.2	11.4	6.9	0.3	84.7	82.6	83.8	7.0	78.0	45.5	35.0	1.3	27	23	35	24
CC18	83.1	71.6	11.6	7.8	0.5	86.5	84.8	86.3	7.1	79.4	30.5	27.5	1.5	27	23	24	25
CC20	83.3	71.4	11.9	7.6	0.4	87.1	84.9	86.3	7.1	79.7	37.5	33.0	1.4	19	23	24	33
CC22	85.0	74.6	10.4	7.1	0.4	88.7	86.8	88.6	6.9	81.3	29.5	28.5	1.9	27	24	23	25
CC24	82.8	72.1	10.7	7.2	0.4	86.7	85.9	87.3	6.5	80.2	31.0	27.0	1.4	19	23	24	26
Avg.	83.0	72.1	11.0	7.1	0.4	86.6	85.3	86.7	6.9	80.0	34.6	28.3	1.4	-	-	-	-
Std Dv	1.0	1.3	0.7	0.4	0.1	1.2	1.4	1.5	0.3	1.1	5.6	5.1	0.2	-	-	-	-
90% CI	0.8	1.0	0.5	0.3	0.0	0.9	1.0	1.1	0.2	0.8	4.1	3.7	0.1	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
CZ31	84.2	72.7	11.4	7.8	0.5	87.6	86.2	87.1	7.6	82.0	29.5	24.0	0.9	22	23	24	22
CZ33	83.2	72.1	11.1	7.0	0.3	86.7	86.1	87.4	6.8	81.3	37.5	24.5	1.3	23	23	26	24
CZ35	83.3	72.4	10.9	7.0	0.3	86.7	84.0	85.3	7.3	80.6	36.5	36.0	1.3	28	25	24	26
CZ37	82.3	70.4	12.0	7.7	0.4	85.7	83.3	84.2	7.8	81.9	36.5	29.5	0.9	26	23	22	24
CZ39	84.9	73.8	11.1	7.4	0.4	88.0	86.7	88.1	7.5	81.8	31.0	21.0	1.6	27	24	23	25
Avg.	83.6	72.3	11.3	7.4	0.4	86.9	85.3	86.4	7.4	81.5	34.2	27.0	1.2	-	-	-	-
Std Dv	1.0	1.2	0.4	0.4	0.1	0.9	1.5	1.6	0.4	0.6	3.7	5.9	0.3	-	-	-	-
90% CI	0.9	1.2	0.4	0.4	0.1	0.9	1.4	1.5	0.4	0.6	3.5	5.6	0.3	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts.

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
K41	83.4	72.0	11.4	7.5	0.4	86.9	84.4	85.9	7.3	80.6	33.0	32.0	1.8	27	23	24	27
K42	82.5	71.0	11.4	7.7	0.5	86.4	85.1	86.4	6.9	80.8	30.5	29.0	1.3	23	23	24	22
K43	83.8	72.6	11.3	7.3	0.4	87.2	85.6	86.8	7.3	81.1	34.5	27.0	1.4	27	24	23	25
K45	83.8	73.4	10.4	7.1	0.4	87.3	86.2	87.5	6.9	81.0	28.5	27.0	1.2	27	24	23	32
K46	84.6	72.7	11.8	8.1	0.5	88.1	85.6	86.6	7.9	81.2	29.5	28.5	1.3	27	24	23	25
Avg.	83.6	72.3	11.3	7.5	0.4	87.2	85.4	86.6	7.2	81.0	31.2	28.7	1.4	-	-	-	-
Std Dv	0.8	0.9	0.5	0.4	0.1	0.6	0.7	0.6	0.4	0.2	2.5	2.0	0.2	-	-	-	-
90% CI	0.7	0.8	0.5	0.3	0.1	0.6	0.6	0.6	0.4	0.2	2.4	2.0	0.2	-	-	-	-

6 DEGREE APPROACH -- TARGET IAS 57kts.

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
KK52	81.8	70.4	11.4	7.3	0.4	85.0	82.8	83.7	7.2	81.5	37.5	36.5	1.4	27	24	23	34
KK53	83.7	73.6	10.1	7.2	0.4	87.2	85.5	86.7	7.5	81.3	25.5	25.5	1.1	22	23	22	24
KK54	83.5	72.7	10.8	7.3	0.4	87.1	86.0	86.9	7.3	82.3	30.0	25.0	0.9	24	24	23	22
KK55	83.2	70.7	12.6	7.3	0.3	86.0	82.9	83.8	7.9	82.6	52.5	34.5	0.9	22	35	34	24
KK56	82.0	69.9	12.1	7.2	0.3	85.0	81.6	82.7	7.6	80.8	48.0	40.5	1.3	27	24	34	35
KK57	84.0	74.1	9.9	6.9	0.4	87.6	86.8	88.4	6.7	82.4	27.5	24.0	1.6	27	24	23	25
Avg.	83.0	71.9	11.2	7.2	0.4	86.3	84.3	85.4	7.4	81.8	36.8	31.0	1.2	-	-	-	-
Std Dv	0.9	1.8	1.1	0.2	0.0	1.2	2.1	2.2	0.4	0.7	11.3	7.0	0.3	-	-	-	-
90% CI	0.8	1.5	0.9	0.1	0.0	0.9	1.7	1.8	0.3	0.6	9.3	5.8	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.21

US/CANADIAN TEST -DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/ 4/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	84.0	74.5	9.5	7.5	0.5	87.2	86.4	88.2	7.5	81.3	18.5	16.0	1.9	20	33	23	34
AA3	83.9	75.2	8.7	7.2	0.5	86.9	87.0	88.1	7.3	83.4	16.5	16.0	1.1	22	24	22	28
AA5	82.9	74.2	8.8	6.9	0.4	85.9	86.3	87.6	6.6	81.7	18.5	17.5	1.3	22	24	34	33
AA6	83.9	75.6	8.3	7.1	0.5	87.2	87.6	89.6	6.7	82.1	15.0	14.0	2.0	20	33	34	23
AA7	82.7	74.4	8.3	7.0	0.4	85.5	86.0	87.3	6.9	82.5	15.5	15.5	1.3	22	26	22	24
AA8	84.4	75.7	8.7	7.4	0.5	87.8	87.9	89.7	7.0	82.6	15.0	14.5	1.9	22	23	22	33
Avg.	83.6	74.9	8.7	7.2	0.5	86.7	86.9	88.4	7.0	82.3	16.5	15.6	1.6	-	-	-	-
Std Dv	0.7	0.6	0.4	0.2	0.0	0.9	0.8	1.0	0.3	0.7	1.6	1.2	0.4	-	-	-	-
90% CI	0.5	0.5	0.4	0.2	0.0	0.7	0.6	0.8	0.3	0.6	1.4	1.0	0.3	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	83.1	75.1	8.0	7.0	0.5	86.1	86.7	87.5	7.1	84.8	14.0	16.5	0.8	22	34	35	24
AZ28	83.3	74.2	9.1	7.0	0.4	86.6	86.9	88.4	6.5	84.5	20.0	18.0	1.5	22	23	34	33
AZ29	82.3	74.1	8.2	7.0	0.4	85.4	86.1	86.7	7.3	85.8	15.0	15.5	0.6	22	35	34	33
AZ30	83.3	74.7	8.6	6.9	0.4	86.6	87.0	88.4	6.7	84.3	17.5	17.0	1.4	22	23	34	33
Avg.	83.0	74.5	8.5	7.0	0.4	86.2	86.7	87.8	6.9	84.8	16.6	16.7	1.1	-	-	-	-
Std Dv	0.5	0.5	0.5	0.0	0.0	0.6	0.4	0.8	0.3	0.7	2.7	1.0	0.4	-	-	-	-
90% CI	0.6	0.5	0.6	0.0	0.0	0.7	0.5	0.9	0.4	0.8	3.2	1.2	0.5	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.20

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
M47	88.0	79.7	8.3	7.1	0.5	90.7	91.3	93.3	6.5	87.5	14.5	14.0	1.9	28	25	24	26
M48	84.2	76.5	7.7	5.8	0.3	87.4	88.5	89.7	6.1	87.1	21.0	18.5	1.1	27	26	27	28
M49	85.9	79.5	6.4	6.3	0.4	89.0	90.4	92.5	6.5	87.5	10.5	10.0	2.3	27	27	24	25
M50	85.2	77.6	7.6	6.7	0.4	88.0	88.9	90.7	6.7	86.0	13.5	12.5	2.0	27	27	26	24
M51	85.2	76.8	8.4	7.1	0.4	88.4	88.4	90.1	7.1	86.0	15.5	15.0	1.7	27	27	24	26
Avg.	85.7	78.0	7.7	6.6	0.4	88.7	89.5	91.2	6.6	86.8	15.0	14.0	1.8	-	-	-	-
Std Dv	1.4	1.5	0.8	0.6	0.1	1.3	1.3	1.6	0.3	0.8	3.8	3.1	0.5	-	-	-	-
90% CI	1.4	1.4	0.8	0.5	0.1	1.2	1.3	1.5	0.3	0.7	3.7	3.0	0.4	-	-	-	-
APPROACH -- BELL QUIET TYPE (SEE TEXT)																	
MM58	85.0	76.7	8.4	6.7	0.4	88.5	88.5	90.8	6.7	86.3	18.0	14.0	2.4	27	27	25	24
MM59	86.2	77.0	9.2	7.3	0.5	89.5	88.4	90.4	7.1	86.0	18.0	19.0	2.2	27	27	24	25
MM60	87.4	78.3	9.1	7.1	0.4	90.6	90.6	92.2	6.8	87.1	18.5	16.5	1.8	27	25	27	24
MM61	85.9	77.6	8.3	6.1	0.3	88.8	89.4	91.3	6.6	86.2	22.5	14.0	2.0	27	27	24	26
MM62	84.5	75.7	8.8	6.2	0.3	87.4	87.4	88.4	6.4	85.9	26.0	25.5	1.1	27	24	27	26
Avg.	85.8	77.1	8.7	6.7	0.4	89.0	88.8	90.6	6.7	86.3	20.6	17.8	1.9	-	-	-	-
Std Dv	1.1	1.0	0.4	0.5	0.1	1.2	1.2	1.4	0.3	0.5	3.6	4.8	0.5	-	-	-	-
90% CI	1.0	0.9	0.4	0.5	0.1	1.1	1.1	1.4	0.3	0.5	3.4	4.6	0.5	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BB11	84.4	73.7	10.7	7.5	0.4	88.2	85.8	88.5	7.2	80.8	26.5	22.5	2.6	22	24	22	33
BB13	85.4	75.3	10.2	7.3	0.4	89.3	87.6	90.3	6.8	82.7	24.5	21.5	2.8	22	22	24	33
BB15	83.3	73.4	9.9	7.0	0.4	87.0	86.2	88.9	6.4	81.3	26.0	18.0	2.7	22	22	24	34
BB17	83.7	72.9	10.9	7.8	0.5	87.7	85.4	88.1	7.0	80.9	25.0	23.5	2.7	22	22	24	34
BB19	83.7	73.5	10.2	7.3	0.4	87.7	86.4	89.2	6.6	81.0	25.0	20.0	2.7	22	22	24	34
BB23	83.7	73.5	10.2	7.2	0.4	87.8	86.4	89.2	6.5	81.6	25.5	21.0	2.8	22	22	24	33
BB25	83.9	73.7	10.2	7.0	0.4	87.7	85.9	88.7	6.7	80.8	29.0	21.5	2.8	22	22	24	27
Avg.	84.0	73.7	10.3	7.3	0.4	87.9	86.2	89.0	6.7	81.3	25.9	21.1	2.7	-	-	-	-
Std Dv	0.7	0.7	0.3	0.3	0.0	0.7	0.7	0.7	0.3	0.7	1.5	1.8	0.1	-	-	-	-
90% CI	0.5	0.5	0.3	0.2	0.0	0.5	0.5	0.5	0.2	0.5	1.1	1.3	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BZ32	84.7	74.2	10.5	7.3	0.4	88.2	85.9	88.5	7.2	81.3	27.0	21.5	2.6	22	22	24	33
BZ34	85.0	74.5	10.5	7.5	0.4	88.8	87.0	89.7	6.9	82.2	25.5	20.5	2.7	22	22	24	34
BZ36	84.8	74.4	10.4	7.6	0.5	88.6	87.2	89.9	6.6	82.2	23.5	20.0	2.7	22	22	24	34
BZ38	84.0	73.8	10.2	6.8	0.3	87.6	86.6	89.3	6.9	81.9	31.0	16.5	2.7	22	22	24	34
BZ40	84.3	73.4	10.9	6.8	0.3	88.1	86.4	89.0	7.1	81.9	41.0	19.0	2.6	22	22	34	33
Avg.	84.5	74.0	10.5	7.2	0.4	[illegible].2	86.6	89.3	6.9	81.9	29.6	19.5	2.7	-	-	-	-
Std Dv	0.4	0.5	0.3	0.4	0.1	0.4	0.5	0.6	0.2	0.4	6.9	1.9	0.0	-	-	-	-
90% CI	0.4	0.4	0.3	0.4	0.1	0.4	0.5	0.5	0.2	0.4	6.6	1.8	0.0	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.19

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CC10	89.4	79.4	10.0	7.4	0.5	92.1	89.2	91.4	7.9	84.6	22.0	22.0	2.7	28	28	27	26
CC12	88.0	77.2	10.8	7.7	0.5	90.7	89.0	90.4	7.4	85.0	26.0	25.5	1.3	27	24	23	27
CC14	86.2	76.8	9.4	6.5	0.3	88.6	87.8	89.2	6.5	83.7	28.0	28.0	1.4	27	27	26	24
CC16	87.7	79.0	8.7	6.8	0.4	90.1	90.6	91.7	6.7	86.5	18.5	17.5	1.1	24	24	26	23
CC18	88.3	79.0	9.3	6.9	0.4	91.3	90.2	92.0	7.1	85.5	22.0	20.5	2.0	27	24	25	27
CC20	89.4	78.7	10.6	7.6	0.5	91.6	90.5	91.8	7.7	86.8	25.5	19.0	1.8	27	24	23	27
CC22	87.2	79.1	8.1	6.5	0.4	90.1	90.7	92.5	6.3	86.9	17.5	16.0	1.8	27	23	27	24
CC24	89.0	77.2	11.8	7.7	0.4	91.6	88.8	91.0	7.0	84.6	34.0	33.0	2.2	27	24	27	25
Avg.	88.1	78.3	9.8	7.1	0.4	90.8	89.6	91.2	7.1	85.5	24.2	22.7	1.8	-	-	-	-
Std Dv	1.1	1.1	1.2	0.5	0.1	1.1	1.1	1.1	0.6	1.2	5.4	5.8	0.5	-	-	-	-
90% CI	0.7	0.7	0.8	0.3	0.0	0.8	0.7	0.7	0.4	0.8	3.6	3.9	0.4	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CZ31	88.0	77.0	11.1	7.9	0.5	90.8	89.1	90.5	7.5	86.4	25.5	23.0	1.4	27	24	23	27
CZ33	87.7	76.9	10.8	7.6	0.5	90.5	89.0	89.7	7.7	87.0	26.5	26.0	0.7	26	23	24	26
CZ35	89.5	78.7	10.8	7.6	0.5	92.0	90.3	92.3	7.8	87.5	26.5	17.5	2.0	27	24	27	25
CZ37	87.4	78.1	9.4	6.9	0.4	90.2	89.7	90.6	7.1	86.8	23.0	23.0	0.9	24	24	23	26
CZ39	85.9	73.6	12.3	8.2	0.5	88.6	86.3	87.7	7.3	86.4	32.0	30.5	1.6	27	24	27	23
Avg.	87.7	76.8	10.9	7.6	0.5	90.4	88.9	90.2	7.5	86.8	26.7	24.0	1.3	-	-	-	-
Std Dv	1.3	2.0	1.1	0.5	0.1	1.2	1.5	1.7	0.3	0.5	3.3	4.8	0.5	-	-	-	-
90% CI	1.2	1.9	1.0	0.5	0.1	1.2	1.5	1.6	0.3	0.4	3.1	4.5	0.5	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
K41	89.1	79.2	9.8	7.3	0.4	92.2	91.4	93.3	7.2	88.4	22.0	17.5	1.9	27	24	23	27
K42	89.1	78.2	11.0	7.3	0.4	91.8	89.6	91.2	7.2	86.8	31.5	30.5	2.6	27	27	25	24
K43	88.0	77.2	10.9	7.8	0.5	90.9	89.1	90.3	8.0	87.4	24.5	20.5	1.3	27	24	23	27
K45	88.2	78.3	9.9	7.4	0.4	91.4	90.0	92.0	7.1	87.7	22.5	21.0	2.1	27	24	27	23
K46	87.8	77.6	10.1	7.4	0.4	90.7	89.4	91.0	7.2	87.5	23.0	22.5	1.6	27	24	23	27
Avg.	88.4	78.1	10.3	7.4	0.4	91.4	89.9	91.6	7.3	87.6	24.7	22.4	1.9	-	-	-	-
Std Dv	0.6	0.8	0.5	0.2	0.0	0.6	0.9	1.1	0.4	0.6	3.9	4.9	0.5	-	-	-	-
90% CI	0.6	0.7	0.5	0.2	0.0	0.6	0.9	1.1	0.4	0.5	3.7	4.7	0.5	-	-	-	-
6 DEGREE APPROACH -- TARGET IAS 57kts.																	
KK52	86.2	76.3	9.9	7.1	0.4	89.1	88.1	89.9	7.6	86.6	25.0	16.0	1.8	27	24	27	23
KK53	87.9	77.1	10.8	8.0	0.5	91.1	89.1	90.8	7.7	87.4	22.5	21.5	1.7	27	24	23	27
KK54	88.5	79.8	8.7	6.1	0.3	90.7	90.7	92.6	6.6	86.6	27.0	17.0	1.9	27	24	25	27
KK55	88.5	78.1	10.4	7.4	0.4	91.2	88.5	90.3	7.7	86.5	25.5	25.5	1.7	27	27	24	23
KK56	87.9	77.4	10.5	7.4	0.4	90.9	89.0	91.2	7.0	87.1	26.0	25.0	2.2	27	27	26	24
KK57	89.1	78.7	10.5	8.0	0.5	92.2	90.4	92.3	7.7	88.0	20.5	19.0	1.8	27	24	23	25
Avg.	88.0	77.9	10.1	7.3	0.4	90.9	89.3	91.2	7.4	87.0	24.4	20.7	1.8	-	-	-	-
Std Dv	1.0	1.2	0.7	0.7	0.1	1.0	1.0	1.1	0.5	0.6	2.4	4.0	0.2	-	-	-	-
90% CI	0.8	1.0	0.6	0.6	0.1	0.8	0.8	0.9	0.4	0.5	2.0	3.3	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.18

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
3/19/85

SUMMARY NOISE LEVEL DATA

AS MEASURED *

SITE: 1G CENTERLINE-CENTER (FLUSH) AUG. 28,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AA2	88.3	81.0	7.3	6.7	0.4	92.2	93.6	95.1	6.7	88.8	12.0	12.0	1.4	20	23	26	25
AA3	88.7	81.2	7.5	6.9	0.5	92.4	93.9	95.2	6.7	89.4	12.5	12.0	1.3	20	23	26	25
AA5	87.6	80.1	7.5	6.8	0.5	91.1	92.4	93.7	6.8	88.1	12.5	12.5	1.2	20	26	25	27
AA6	88.6	82.0	6.6	6.2	0.4	92.2	94.4	95.7	6.3	89.3	11.5	11.0	1.3	20	26	25	23
AA7	87.7	80.5	7.2	6.8	0.5	91.8	93.4	94.9	6.5	89.4	11.5	11.5	1.5	20	23	26	25
AA8	88.3	81.2	7.1	7.1	0.5	92.1	94.0	95.2	6.9	89.6	10.0	10.0	1.2	20	23	26	25
Avg.	88.2	81.0	7.2	6.8	0.5	92.0	93.6	94.9	6.6	89.1	11.7	11.5	1.3	-	-	-	-
Std Dv	0.5	0.6	0.4	0.3	0.0	0.5	0.7	0.7	0.2	0.5	0.9	0.9	0.1	-	-	-	-
90% CI	0.4	0.5	0.3	0.2	0.0	0.4	0.6	0.6	0.2	0.5	0.8	0.7	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AZ27	86.7	79.3	7.4	6.7	0.4	90.4	91.8	93.1	6.9	87.5	12.5	11.5	1.2	20	23	26	27
AZ28	87.2	80.2	6.9	6.7	0.4	90.7	92.6	94.2	6.5	88.0	11.0	10.0	1.6	20	26	25	23
AZ29	86.9	79.5	7.4	6.7	0.4	90.4	92.3	93.5	6.5	87.8	12.5	11.5	1.2	20	23	26	25
AZ30	86.4	78.8	7.6	6.8	0.4	90.0	91.6	92.8	6.7	87.4	13.0	12.0	1.3	20	26	23	25
Avg.	86.8	79.5	7.3	6.7	0.4	90.4	92.1	93.4	6.7	87.7	12.2	11.2	1.3	-	-	-	-
Std Dv	0.3	0.6	0.3	0.1	0.0	0.3	0.5	0.6	0.2	0.3	0.9	0.9	0.2	-	-	-	-
90% CI	0.4	0.7	0.3	0.1	0.0	0.3	0.5	0.7	0.2	0.3	1.0	1.0	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.32

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 1G   CENTERLINE-CENTER (FLUSH)   AUG. 29,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CY2	93.0	85.4	7.6	6.8	0.4	95.7	97.6	98.2	6.8	94.1	13.0	12.5	0.6	25	25	26	24
CY4	92.6	83.8	8.7	7.3	0.5	95.4	96.1	96.5	7.5	93.6	16.0	16.0	0.7	18	24	25	26
CY6	93.3	85.3	8.1	7.0	0.4	96.1	97.0	97.2	7.5	93.5	14.5	15.0	0.4	20	25	24	26
CY8	93.5	85.1	8.4	7.2	0.5	96.3	97.0	97.7	7.4	94.7	14.5	14.5	0.6	18	24	23	25
CY10	94.1	84.8	9.3	7.7	0.5	96.7	97.5	97.5	7.6	95.0	16.5	16.0	-	28	24	23	25
CY12	92.0	84.6	7.4	6.4	0.4	94.9	96.4	97.0	6.7	93.5	14.5	15.5	0.6	18	24	25	23
CY14	93.1	85.1	8.1	6.6	0.4	96.0	96.8	97.3	7.0	94.1	16.5	17.0	0.5	18	25	24	26
CY16	93.7	86.3	7.3	6.6	0.4	96.3	97.9	98.7	6.9	94.5	13.0	13.0	0.7	18	24	25	27
CY18	93.8	86.3	7.4	6.1	0.3	96.2	98.1	98.6	6.4	94.6	16.5	15.5	0.5	18	24	25	23
Avg.	93.2	85.2	8.0	6.8	0.4	96.0	97.2	97.6	7.1	94.2	15.0	15.0	0.5	-	-	-	-
Std Dv	0.6	0.8	0.7	0.5	0.1	0.5	0.7	0.7	0.4	0.6	1.4	1.5	0.2	-	-	-	-
90% CI	0.4	0.5	0.4	0.3	0.0	0.3	0.4	0.5	0.3	0.3	0.9	0.9	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BY3	89.2	79.9	9.3	7.2	0.4	93.2	92.7	94.4	7.4	87.2	19.5	15.5	2.2	22	34	35	22
BY5	89.0	79.4	9.7	7.4	0.5	93.3	92.2	94.4	7.2	85.8	20.0	17.5	2.2	22	34	35	33
BY9	89.1	80.4	8.7	7.0	0.4	93.7	93.7	96.2	6.6	88.6	17.0	14.0	2.5	19	22	35	34
BY11	88.5	79.9	8.6	7.1	0.4	93.0	92.7	95.1	6.8	86.9	16.0	14.0	2.4	22	35	22	34
BY13	88.2	79.0	9.2	7.2	0.4	92.5	91.9	94.2	7.0	86.3	18.5	15.0	2.4	19	22	24	35
BY15	89.0	79.8	9.2	7.2	0.4	93.5	93.4	95.3	6.8	86.9	18.5	16.0	1.9	19	35	34	36
BY17	89.0	79.4	9.7	7.6	0.5	93.2	92.2	94.3	7.1	86.2	19.0	17.5	2.2	22	34	35	22
Avg.	88.9	79.7	9.2	7.3	0.5	93.2	92.7	94.9	7.0	86.9	18.4	15.6	2.3	-	-	-	-
Std Dv	0.4	0.5	0.4	0.2	0.0	0.4	0.7	0.7	0.3	0.9	1.4	1.5	0.2	-	-	-	-
90% CI	0.3	0.3	0.3	0.1	0.0	0.3	0.5	0.5	0.2	0.7	1.0	1.1	0.2	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AY19	87.9	81.6	6.3	6.3	0.4	91.9	94.4	95.7	6.5	89.5	10.0	9.0	1.4	20	26	25	23
AY20	88.1	81.4	6.7	6.1	0.4	91.9	94.0	95.6	6.3	88.9	12.5	10.0	1.7	20	23	26	25
AY21	88.3	82.1	6.2	6.5	0.5	92.3	94.7	96.3	6.5	89.6	9.0	8.5	1.6	20	26	23	25
AY22	87.5	80.3	7.2	6.6	0.4	91.3	93.1	94.6	6.4	88.6	12.0	11.0	1.5	20	23	26	25
AY23	87.4	79.8	7.6	7.2	0.5	91.1	92.3	93.6	7.3	87.9	11.5	10.5	1.5	20	26	25	23
AY24	87.5	80.3	7.2	6.5	0.4	91.1	93.5	94.3	6.3	88.9	13.0	12.0	0.6	20	23	24	26
AY25	87.9	80.6	7.2	6.6	0.4	91.5	93.2	94.5	7.0	88.6	12.5	10.0	1.3	20	26	25	27
AY27	87.3	80.1	7.3	6.6	0.4	91.5	93.2	94.4	6.5	88.3	12.5	12.5	1.2	20	23	26	25
AY28	86.5	79.0	7.5	6.5	0.4	90.4	91.5	93.0	6.7	86.7	14.0	12.5	1.6	20	25	26	23
AY29	86.5	78.8	7.7	6.9	0.5	90.4	91.4	92.9	7.1	86.6	13.0	11.5	1.8	20	26	25	23
AY30	86.2	79.2	7.0	6.0	0.3	89.9	91.8	93.4	6.6	86.9	15.0	9.5	1.6	20	25	26	23
Avg.	87.4	80.3	7.1	6.5	0.4	91.2	93.0	94.4	6.7	88.2	12.3	10.6	1.4	-	-	-	-
Std Dv	0.7	1.1	0.5	0.3	0.0	0.8	1.1	1.1	0.3	1.1	1.7	1.4	0.3	-	-	-	-
90% CI	0.4	0.6	0.3	0.2	0.0	0.4	0.6	0.6	0.2	0.6	0.9	0.8	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

\- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.33

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 29,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CY2	87.9	77.8	10.1	7.8	0.5	90.6	89.4	91.1	7.7	86.8	20.0	17.0	1.7	27	25	27	23
CY4	89.1	78.8	10.3	7.5	0.5	91.9	90.6	92.5	7.2	87.9	23.5	20.0	1.9	27	24	27	23
CY6	88.5	78.9	9.7	7.0	0.4	91.3	90.5	92.3	6.6	88.4	24.0	23.0	1.7	27	24	27	23
CY8	89.1	79.0	10.1	7.5	0.5	92.2	91.3	93.3	7.0	88.8	22.0	19.0	2.0	27	24	23	25
CY10	89.3	78.8	10.5	7.5	0.4	92.5	90.9	92.8	7.1	88.2	25.0	22.5	1.9	27	24	23	27
CY12	89.0	80.2	8.8	6.7	0.4	91.7	91.5	93.0	6.8	88.6	20.0	19.5	1.3	27	24	23	27
CY14	89.5	78.9	10.6	7.7	0.5	92.7	90.6	92.9	7.2	88.0	24.0	23.0	2.3	27	24	27	23
CY16	87.6	78.6	8.9	6.9	0.4	90.4	90.0	91.7	6.7	88.0	20.0	20.0	1.7	27	24	27	25
CY18	87.1	76.2	10.9	7.7	0.5	89.9	88.3	89.8	7.4	87.6	25.5	23.5	1.4	27	24	25	23
Avg.	88.6	78.6	10.0	7.4	0.4	91.5	90.3	92.2	7.1	88.0	22.7	20.8	1.8	-	-	-	-
Std Dv	0.9	1.1	0.7	0.4	0.0	1.0	1.0	1.1	0.4	0.6	2.2	2.2	0.3	-	-	-	-
90% CI	0.5	0.7	0.5	0.2	0.0	0.6	0.6	0.7	0.2	0.4	1.4	1.4	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BY3	84.9	74.9	10.0	7.4	0.4	88.8	87.8	90.3	6.6	83.2	22.5	19.5	2.6	22	22	24	34
BY5	84.9	73.9	11.0	7.6	0.4	89.1	87.1	89.8	6.9	82.6	28.0	21.5	2.7	22	22	24	34
BY9	86.1	76.0	10.1	7.3	0.4	90.5	88.4	91.1	6.9	84.5	24.0	23.0	2.7	22	22	24	34
BY11	84.2	73.9	10.3	7.5	0.5	88.6	86.6	89.3	6.9	82.5	23.0	22.0	2.7	22	22	24	34
BY13	84.7	74.6	10.1	7.1	0.4	88.7	87.1	89.8	6.9	82.9	26.5	19.5	2.6	22	22	24	34
BY15	85.5	75.7	9.9	7.1	0.4	89.8	88.5	91.1	7.1	83.7	24.0	17.0	2.6	22	22	34	33
BY17	84.7	75.6	9.1	7.0	0.4	88.8	88.1	90.8	6.8	83.7	20.0	15.0	2.7	22	22	24	33
Avg.	85.0	75.0	10.0	7.3	0.4	89.2	87.7	90.3	6.9	83.3	24.0	19.6	2.7	-	-	-	-
Std Dv	0.6	0.9	0.6	0.2	0.0	0.7	0.7	0.7	0.2	0.7	2.6	2.9	0.1	-	-	-	-
90% CI	0.5	0.6	0.4	0.2	0.0	0.5	0.5	0.5	0.1	0.5	1.9	2.1	0.0	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AY19	85.0	76.6	8.4	6.8	0.4	88.4	88.5	90.3	6.7	86.5	17.0	16.5	1.8	22	32	33	34
AY20	83.8	75.4	8.4	6.9	0.4	87.8	87.8	89.3	6.8	87.2	16.5	18.0	1.4	22	24	34	27
AY21	85.1	76.9	8.2	7.0	0.4	88.6	88.8	90.6	6.9	86.0	15.0	14.0	2.1	20	32	33	34
AY22	83.4	74.2	9.1	7.5	0.5	86.8	86.8	88.0	7.3	87.3	16.5	16.0	1.3	22	24	34	26
AY23	84.3	76.1	8.2	6.4	0.3	87.7	88.7	90.1	6.4	85.4	19.0	16.0	1.4	22	23	32	22
AY24	83.9	74.6	9.2	6.3	0.3	86.9	86.8	87.5	6.5	86.0	28.5	28.5	0.7	26	23	24	26
AY25	84.4	75.1	9.3	7.2	0.4	88.0	88.0	89.4	7.3	85.4	19.5	15.0	1.6	22	23	22	33
AY27	84.2	75.3	8.9	6.8	0.4	87.6	88.1	89.4	6.7	86.3	20.0	17.0	1.4	22	23	33	34
AY28	81.8	73.5	8.3	6.6	0.4	84.8	85.1	86.2	6.6	85.3	18.0	20.0	1.1	22	26	22	24
AY29	83.1	74.3	8.8	7.3	0.5	86.9	87.0	88.6	7.0	84.4	16.0	15.5	1.6	22	23	22	33
AY30	82.2	73.2	8.9	6.7	0.4	85.1	84.7	85.9	6.9	84.7	21.5	22.0	1.7	27	27	25	34
Avg.	83.7	75.0	8.7	6.9	0.4	87.2	87.3	88.7	6.8	85.9	18.9	18.0	1.5	-	-	-	-
Std Dv	1.1	1.2	0.4	0.4	0.1	1.2	1.4	1.6	0.3	0.9	3.7	4.2	0.4	-	-	-	-
90% CI	0.6	0.7	0.2	0.2	0.0	0.7	0.8	0.9	0.2	0.5	2.0	2.3	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.34

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/ 4/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 29,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CY2	83.0	71.8	11.2	7.2	0.4	86.5	85.5	86.7	7.0	81.6	36.0	24.5	1.2	19	23	24	35
CY4	83.9	72.2	11.7	7.0	0.3	87.2	84.9	85.9	8.0	81.5	45.5	26.5	1.4	27	33	32	24
CY6	83.4	73.8	9.6	8.0	0.6	-	86.4	87.9	-	81.3	16.0	-	1.6	27	24	23	25
CY8	84.7	74.3	10.4	6.7	0.3	88.1	87.0	87.8	6.8	82.0	36.0	32.5	0.8	27	24	23	25
CY10	84.0	72.2	11.8	7.3	0.4	87.5	84.7	86.0	7.7	81.2	42.0	30.5	1.5	27	23	24	27
CY12	83.1	71.9	11.1	7.2	0.4	86.8	85.7	86.9	6.7	81.3	36.0	29.5	1.2	19	23	22	26
CY14	84.3	73.0	11.3	7.0	0.3	87.7	85.1	86.4	7.4	81.7	42.5	34.5	1.5	28	25	24	26
CY16	84.9	74.3	10.7	7.2	0.4	88.3	87.6	88.7	7.0	83.6	31.0	23.5	1.1	19	23	24	22
CY18	84.2	74.5	9.7	6.7	0.3	87.6	87.1	88.9	6.8	82.8	28.0	19.0	1.8	27	24	23	25
Avg.	84.0	73.1	10.8	7.1	0.4	87.5	86.0	87.3	7.2	81.9	34.8	27.6	1.4	-	-	-	-
Std Dv	0.7	1.1	0.8	0.4	0.1	0.6	1.1	1.1	0.5	0.8	9.0	5.1	0.3	-	-	-	-
90% CI	0.4	0.7	0.5	0.2	0.0	0.4	0.7	0.7	0.3	0.5	5.6	3.4	0.2	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BY3	84.0	74.3	9.7	7.2	0.4	88.0	87.6	89.8	6.3	85.6	22.0	20.5	2.2	22	24	22	34
BY5	83.8	73.7	10.1	7.1	0.4	87.6	87.0	89.5	6.1	85.0	26.0	20.5	2.5	22	24	22	35
BY9	83.8	75.3	8.5	6.6	0.4	87.6	88.4	90.8	5.9	85.6	19.5	14.0	2.5	22	24	22	34
BY11	83.4	74.1	9.4	6.9	0.4	87.3	87.3	89.7	6.1	85.3	23.0	18.0	2.4	22	24	22	34
BY13	83.5	73.0	10.6	7.7	0.5	87.4	86.0	88.4	6.8	84.6	24.0	20.5	2.5	22	24	22	27
BY15	83.8	73.5	10.3	7.6	0.5	87.4	86.6	88.9	6.9	84.8	23.0	17.5	2.4	22	24	22	34
BY17	83.6	73.9	9.6	6.9	0.4	87.3	87.0	89.4	6.1	84.8	25.0	20.0	2.4	22	24	22	27
Avg.	83.7	74.0	9.7	7.1	0.4	87.5	87.1	89.5	6.3	85.1	23.2	18.7	2.4	-	-	-	-
Std Dv	0.2	0.7	0.7	0.4	0.0	0.3	0.8	0.7	0.4	0.4	2.1	2.4	0.1	-	-	-	-
90% CI	0.1	0.5	0.5	0.3	0.0	0.2	0.6	0.5	0.3	0.3	1.6	1.8	0.1	-	-	-	-
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AY19	84.1	76.0	8.1	6.7	0.4	88.0	88.8	90.4	6.5	86.9	16.0	15.0	1.6	22	24	34	35
AY20	84.4	75.1	9.3	7.4	0.5	88.1	87.6	89.3	7.1	85.2	18.0	17.5	1.6	20	23	33	32
AY21	83.9	76.2	7.7	6.6	0.4	87.6	88.4	89.9	6.6	88.0	14.5	14.5	1.6	22	24	34	27
AY22	84.0	74.8	9.2	6.9	0.4	87.7	87.8	89.4	6.4	85.6	21.5	20.0	1.7	20	23	33	32
AY23	83.1	74.8	8.3	6.5	0.4	86.4	86.3	87.6	6.9	86.5	19.0	19.0	1.3	22	26	23	24
AY24	83.5	74.2	9.3	7.4	0.5	87.4	87.7	89.2	6.7	84.8	17.5	16.0	1.6	22	23	22	32
AY25	83.5	74.9	8.5	7.2	0.5	86.9	87.3	88.1	7.4	87.7	15.5	15.5	0.9	22	23	24	22
AY27	83.5	74.9	8.5	6.7	0.4	-	87.3	88.1	-	86.7	19.0	-	0.9	22	34	22	23
AY28	83.3	74.3	9.0	6.9	0.4	87.1	87.4	89.1	6.5	84.7	20.0	17.0	1.8	22	23	22	33
AY29	83.0	74.1	8.9	7.1	0.4	86.4	86.1	86.9	7.6	85.9	17.5	18.0	0.8	28	23	26	34
AY30	83.4	73.6	9.8	6.9	0.4	87.2	87.1	89.0	6.2	84.0	26.0	21.5	1.8	23	23	33	32
Avg.	83.6	74.8	8.8	6.9	0.4	87.3	87.4	88.8	6.8	86.0	18.6	17.4	1.4	-	-	-	-
Std Dv	0.4	0.8	0.6	0.3	0.0	0.6	0.8	1.0	0.5	1.3	3.2	2.3	0.4	-	-	-	-
90% CI	0.2	0.4	0.3	0.2	0.0	0.3	0.4	0.6	0.3	0.7	1.7	1.3	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.35

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: A   CENTERLINE - 150 M. WEST   AUG. 29,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	OASPLm	DUR(A)	DUR(P)	TC	BAND	MAX. NOY BANDS		
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CY2	89.2	82.3	6.9	6.2	0.4	91.9	93.6	94.6	6.5	90.0	13.0	13.5	1.0	25	25	27	24
CY4	89.3	80.9	8.4	6.9	0.4	92.2	93.0	93.6	7.1	90.8	16.5	16.0	0.5	21	22	25	24
CY6	90.4	80.7	9.7	7.1	0.4	93.1	92.6	93.6	7.0	89.4	23.0	22.5	1.0	28	25	26	24
CY8	90.7	82.2	8.5	6.8	0.4	93.3	93.7	94.8	6.9	90.6	18.0	17.5	1.1	25	25	26	27
CY10	90.2	81.4	8.9	6.8	0.4	93.0	92.9	93.8	7.0	89.7	20.0	21.0	1.0	25	25	27	26
CY12	89.5	80.8	8.7	6.9	0.4	92.1	92.3	93.1	7.0	89.2	18.5	19.5	0.8	25	25	23	22
CY14	88.8	79.4	9.4	7.0	0.4	91.8	91.1	91.9	7.1	87.9	22.5	24.5	0.8	25	25	26	23
CY16		----------		NO DATA		----------											
CY18	88.9	80.1	8.8	7.2	0.4	91.8	91.7	92.5	7.5	89.0	17.0	17.5	0.8	20	25	23	22
Avg.	89.6	81.0	8.7	6.9	0.4	92.4	92.6	93.5	7.0	89.6	18.6	19.0	0.9	-	-	-	-
Std Dv	0.7	1.0	0.8	0.3	0.0	0.7	0.9	1.0	0.3	0.9	3.3	3.6	0.2	-	-	-	-
90% CI	0.5	0.7	0.6	0.2	0.0	0.4	0.6	0.7	0.2	0.6	2.2	2.4	0.1	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BY3	84.5	75.1	9.4	7.3	0.4	88.0	87.3	89.1	7.2	80.9	19.5	17.5	2.1	22	34	35	33
BY5	85.2	74.4	10.8	7.8	0.5	88.9	86.7	88.1	7.9	79.8	24.0	23.5	1.9	22	34	35	22
BY9	85.4	76.3	9.1	6.6	0.3	89.6	89.3	91.4	6.8	81.1	23.5	16.5	2.0	22	35	34	33
BY11	85.0	74.4	10.5	7.5	0.5	88.5	86.9	88.8	7.2	80.2	25.0	23.0	1.8	22	34	35	33
BY13	84.9	75.5	9.3	7.2	0.4	88.6	87.8	89.7	7.0	81.3	20.0	18.5	1.9	22	34	35	22
BY15	84.9	74.6	10.2	7.2	0.4	88.5	87.2	89.2	6.9	81.5	26.0	22.0	1.9	22	35	22	34
BY17	85.0	75.1	9.9	7.0	0.4	88.5	87.2	89.2	7.1	80.9	25.5	20.5	2.0	22	35	34	22
Avg.	85.0	75.1	9.9	7.2	0.4	88.7	87.5	89.3	7.1	80.8	23.4	20.2	2.0	-	-	-	-
Std Dv	0.3	0.7	0.7	0.4	0.1	0.5	0.9	1.0	0.3	0.6	2.6	2.8	0.1	-	-	-	-
90% CI	0.2	0.5	0.5	0.3	0.0	0.4	0.6	0.8	0.3	0.4	1.9	2.0	0.1	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AY19	85.4	79.2	6.2	6.5	0.5	89.0	92.0	92.9	6.5	86.8	9.0	8.5	1.3	23	23	26	34
AY20	85.9	78.2	7.7	6.8	0.4	89.3	90.9	92.2	6.5	85.5	13.5	12.5	1.3	23	23	26	27
AY21	85.5	79.0	6.5	6.5	0.5	89.1	91.5	92.8	6.6	86.2	10.0	9.0	1.3	23	23	26	35
AY22	85.2	77.6	7.6	6.5	0.4	88.2	89.8	91.1	6.9	85.5	15.0	11.0	1.3	23	26	23	27
AY23	84.7	77.7	7.0	6.6	0.4	88.1	90.0	91.0	6.7	85.1	11.5	11.5	1.3	23	23	26	27
AY24	85.1	76.0	9.1	6.9	0.4	88.4	88.5	90.0	6.4	83.7	21.0	20.0	1.6	23	23	26	27
AY25	84.5	76.4	8.2	6.6	0.4	87.5	88.4	89.6	6.3	84.6	17.5	17.5	1.2	28	26	23	28
AY27	84.4	77.7	6.7	6.3	0.4	87.9	89.9	91.1	6.5	85.0	11.5	11.0	1.2	23	26	23	27
AY28	84.6	77.1	7.4	6.7	0.4	-	89.8	91.2	-	84.4	13.0	-	1.6	23	26	23	25
AY29	84.0	76.8	7.2	6.7	0.4	87.5	89.3	90.3	6.8	84.1	12.0	11.5	0.9	23	23	26	27
AY30	84.9	76.3	8.5	6.9	0.4	88.3	89.7	90.9	6.3	85.0	17.0	15.0	1.2	23	23	26	22
Avg.	84.9	77.5	7.5	6.6	0.4	88.3	90.0	91.2	6.5	85.1	13.7	12.7	1.3	-	-	-	-
Std Dv	0.6	1.1	0.9	0.2	0.0	0.6	1.1	1.1	0.2	0.9	3.6	3.7	0.2	-	-	-	-
90% CI	0.3	0.6	0.5	0.1	0.0	0.4	0.6	0.6	0.1	0.5	2.0	2.1	0.1	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRACK

■ - TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

Table B.36

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

SUMMARY NOISE LEVEL DATA

AS MEASURED *

DOT/TSC
3/19/85

SITE: 5 CENTERLINE - 150 M. EAST AUG. 29,1984

EV	SEL	ALm	SEL-ALm	K(A)	Q	EPNL	PNLm	PNLTm	K(P)	DASPLm	DUR(A)	DUR(P)	TC	BAND	MAX.	NOY	BANDS
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO																	
CY2	90.8	83.8	7.1	6.5	0.4	93.7	95.9	96.9	6.4	92.4	12.0	12.0	0.9	25	25	26	23
CY4	90.8	83.5	7.3	6.3	0.4	93.4	94.6	95.4	6.8	91.1	14.0	15.0	0.9	25	25	26	27
CY6	90.0	83.5	6.5	5.9	0.4	93.0	95.0	95.9	6.2	91.9	12.5	13.5	0.9	18	23	25	26
CY8	91.1	83.1	8.1	6.8	0.4	94.0	94.5	95.3	7.1	91.9	15.5	16.5	0.8	25	25	23	22
CY10	92.0	84.0	8.0	6.8	0.4	94.5	95.6	96.4	6.9	92.0	15.0	15.5	0.8	25	25	26	24
CY12	89.6	83.4	6.2	5.9	0.4	92.5	95.1	96.1	5.9	91.2	11.0	12.0	0.9	25	25	24	26
CY14	91.4	82.5	8.9	7.3	0.5	94.1	94.4	95.1	7.5	92.5	16.5	16.0	0.7	22	24	22	26
CY16	90.1	83.3	6.8	5.7	0.3	92.6	94.6	95.3	6.1	91.4	15.5	15.5	0.7	18	23	25	27
CY18	91.6	84.2	7.3	6.3	0.4	94.0	95.8	96.5	6.5	91.9	14.5	14.5	0.7	25	25	26	23
Avg.	90.8	83.5	7.3	6.4	0.4	93.5	95.1	95.9	6.6	91.8	14.1	14.5	0.8	-	-	-	-
Std Dv	0.8	0.5	0.9	0.5	0.0	0.7	0.6	0.6	0.5	0.5	1.8	1.7	0.1	-	-	-	-
90% CI	0.5	0.3	0.5	0.3	0.0	0.5	0.4	0.4	0.3	0.3	1.1	1.0	0.[illegible]	-	-	-	-
TAKEOFF -- TARGET IAS 57kts. -- ICAO																	
BY3	86.5	78.0	8.5	7.5	0.5	90.2	90.8	92.7	7.0	84.8	13.5	12.0	2.1	19	24	22	34
BY5	87.0	77.3	9.7	7.7	0.5	90.8	89.9	91.9	7.3	83.5	18.0	16.5	2.2	19	22	35	34
BY9	87.0	79.0	8.0	7.2	0.5	90.8	91.7	93.8	6.6	85.3	13.0	11.5	2.1	19	22	34	35
BY11	86.8	79.1	7.6	6.7	0.4	90.5	91.6	94.1	6.1	85.1	13.5	11.5	2.4	19	22	34	35
BY13	85.7	77.5	8.4	7.1	0.4	89.7	90.5	92.6	6.5	84.4	15.5	12.5	2.0	22	22	35	34
BY15	87.2	78.2	9.0	7.4	0.5	91.2	91.2	93.4	6.9	85.1	16.5	14.0	2.2	19	22	35	34
BY17	87.4	78.0	9.4	7.6	0.5	91.3	90.8	92.4	7.4	84.0	17.5	16.0	1.6	22	35	34	36
Avg.	86.8	78.2	8.7	7.2	0.5	90.7	90.9	93.0	6.8	84.6	15.4	13.4	2.1	-	-	-	-
Std Dv	0.5	0.7	0.7	0.3	0.0	0.5	0.6	0.8	0.5	0.7	2.1	2.1	0.3	-	-	-	-
90% CI	0.4	0.5	0.5	0.2	0.0	0.4	0.5	0.6	0.3	0.5	1.5	1.5	0.2	-	-	-	-
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh																	
AY19	84.6	77.5	7.1	6.4	0.4	88.1	90.1	91.0	6.7	85.0	13.0	11.5	0.9	19	24	26	23
AY20	85.4	79.6	5.7	5.5	0.3	88.9	92.0	92.0	6.3	87.0	11.0	12.0	-	20	26	24	23
AY21	84.7	77.7	6.9	6.3	0.5	88.0	89.9	91.1	7.1	85.0	10.5	9.5	1.1	23	23	26	32
AY22	84.2	77.2	7.0	6.6	0.4	87.5	89.8	90.9	6.5	84.4	11.5	10.5	1.3	23	23	26	27
AY23	83.8	76.1	7.7	7.1	0.5	86.9	88.1	89.1	7.2	83.8	12.0	12.0	1.2	23	26	23	27
AY24	83.9	76.2	7.7	6.8	0.4	87.2	88.4	89.5	6.9	83.7	13.5	12.5	1.1	23	26	23	27
AY25	84.2	76.5	7.7	6.6	0.4	87.4	89.2	90.5	6.4	83.8	14.5	12.0	1.3	23	23	26	27
AY27	83.7	76.1	7.7	6.8	0.4	-	89.1	90.1	-	84.4	13.5	-	1.0	19	23	24	26
AY28	83.4	75.6	7.8	6.3	0.4	86.9	88.2	89.6	6.1	83.2	17.0	16.0	1.3	23	23	26	27
AY29	83.4	75.8	7.7	6.9	0.4	86.3	88.1	89.1	7.0	83.2	13.0	12.5	1.3	23	26	23	[illegible]
AY30	83.2	74.6	8.7	6.6	0.4	86.4	87.0	87.9	7.5	83.3	20.0	13.5	0.9	19	24	23	22
Avg.	84.0	76.6	7.4	6.6	0.4	87.4	89.1	90.1	6.8	84.2	13.6	12.2	1.0	-	-	-	-
Std Dv	0.7	1.3	0.7	0.4	0.0	0.7	1.4	1.2	0.5	1.1	2.8	1.7	0.4	-	-	-	-
90% CI	0.4	0.7	0.4	0.2	0.0	0.4	0.7	0.6	0.3	0.6	1.5	1.0	0.2	-	-	-	-

* - NOISE INDEXES CALCULATED USING MEASURED DATA UNCORRECTED
FOR TEMPERATURE,HUMIDITY,OR AIRCRAFT DEVIATION FROM REF FLIGHT TRA[illegible]

- TSC2,4-SAMPLE WEIGHTED LOGARITHMIC AVERAGE

APPENDIX C

Fully Corrected Data

The fully corrected data is displayed in tables organized by test series and microphone site. On the left side of the table are the corrected values for EPNL, SEL, $PNLT_M$, and AL_M. The center of the table contains the amount and type of corrections in dB. At the right side of the table is the tracking data given in meters which include acoustical angle, CPA, SR, CPAR, SRR, ground speed (m/sec), and reference speed (m/sec). The corrections made to the data were as follows:

$\Delta 1(P)$ = correction for flight track deviation.

$\Delta 1(A)$ = correction for atmospheric absorption.

$\Delta 2$ = correction for the change in event duration with deviations from the reference flight path.

Madv = corrections for advancing blade tip Mach number, sometimes to as $\Delta 3$.

A detailed discussion of data reduction and processing procedures can be found in Section 5 of this report. The reader may also find it helpful to refer to Figure 5, a measurement site schematic, and Figure 13, a diagram of the magnetic recording instrumentation systems.

Table C.1

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 1 CENTERLINE - CENTER AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
C32	91.3	88.2	94.4	81.0	0.41	0.26	0.25	-	122.4	122.7	145.3	119.3	141.3	31.7	29.3
C34	92.9	90.3	94.6	82.6	0.76	0.64	-0.45	-	112.0	128.0	138.1	119.3	128.7	27.9	29.3
C36	91.9	89.0	93.9	80.9	-0.13	-0.22	0.16	-	123.1	116.3	138.9	119.3	142.5	29.8	29.3
C38	93.0	90.4	94.0	81.4	0.33	0.18	-0.25	-	122.2	121.6	143.7	119.3	141.0	28.1	29.3
C40	93.7	91.3	95.4	84.3	0.17	0.01	0.26	-	137.7	119.2	177.2	119.3	177.5	31.1	29.3
C42	93.0	90.3	95.2	83.6	-0.30	-0.39	0.01	-	147.7	114.2	213.8	119.3	223.3	28.4	29.3
C44	93.0	90.5	93.3	81.5	-0.43	-0.49	-0.10	-	96.0	112.9	113.5	119.3	120.0	27.5	29.3
C46	92.7	89.8	94.8	82.4	0.46	0.33	-0.12	-	122.2	123.6	146.1	119.3	141.1	29.3	29.3
C48	90.6	87.6	91.9	78.6	0.24	0.08	0.09	-	100.2	120.2	122.1	119.3	121.2	30.1	29.3
C50	92.5	89.7	93.7	80.4	0.26	0.11	0.15	-	116.9	120.6	135.2	119.3	133.8	30.6	29.3
Avg.	92.5	89.7	94.1	81.7	0.18	0.05	0.00	-	120.0	119.9	147.4	119.3	147.0	29.5	29.3
Std Dv	0.9	1.1	1.0	1.6	0.36	0.34	0.23	-	15.5	4.5	28.7	0.0	31.2	1.5	0.0
90% CI	0.5	0.7	0.6	1.0	0.21	0.20	0.13	-	9.0	2.6	16.6	0.0	18.1	0.8	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
B33	86.5	83.0	87.9	73.5	-1.71	-1.81	0.42	-	92.4	124.1	124.2	150.9	151.0	27.9	29.3
B37	86.1	82.2	87.6	72.6	-2.22	-2.27	0.13	-	95.0	117.9	118.3	150.9	151.5	25.1	29.3
B39	86.8	82.5	88.3	73.9	-0.48	-0.65	-0.37	-	105.4	139.5	144.7	150.9	156.5	25.4	29.3
B41	86.3	82.6	87.9	73.6	-2.15	-2.23	0.21	-	106.6	118.6	123.8	150.9	157.4	25.7	29.3
B43	87.4	83.4	88.1	73.3	-0.79	-0.88	0.17	-	109.0	136.7	144.5	150.9	159.5	28.3	29.3
B45	87.0	83.3	88.5	74.1	-1.31	-1.41	-0.13	-	111.6	129.3	139.1	150.9	162.3	25.4	29.3
B47	87.3	82.9	89.9	74.0	-1.32	-1.42	-0.32	-	96.1	128.8	129.6	150.9	151.8	24.2	29.3
B49	86.7	82.8	88.4	73.1	-1.76	-1.86	0.25	-	95.3	123.0	123.5	150.9	151.5	26.6	29.3
B52	86.2	82.4	88.0	73.5	-1.64	-1.71	0.16	-	96.5	125.0	125.8	150.9	151.9	26.4	29.3
Avg.	86.7	82.8	88.3	73.5	-1.49	-1.58	0.06	-	100.9	127.0	130.4	150.9	154.8	26.1	29.3
Std Dv	0.5	0.4	0.7	0.5	0.58	0.55	0.27	-	7.2	7.4	9.9	0.0	4.2	1.3	0.0
90% CI	0.3	0.3	0.4	0.3	0.36	0.34	0.17	-	4.5	4.6	6.1	0.0	2.6	0.8	0.0
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
G9	82.4	79.6	83.3	70.6	0.02	-0.07	-0.20	-	99.6	300.8	305.1	300.0	304.2	57.6	60.2
G10	83.2	80.1	83.9	70.4	-0.02	-0.11	0.06	-	123.5	300.0	359.8	300.0	359.8	61.0	60.2
G11	82.3	79.3	83.2	70.4	-0.08	-0.18	-0.16	-	118.2	297.6	337.6	300.0	340.3	57.7	60.2
G13	82.4	79.4	83.7	69.4	0.11	-0.05	-0.24	-	123.4	301.4	361.0	300.0	359.3	57.1	60.2
G14	83.3	80.0	83.3	69.8	0.10	-0.04	-0.02	-	118.6	301.4	343.3	300.0	341.6	60.2	60.2
G15	82.4	79.3	82.5	69.6	0.18	-0.05	-0.21	-	127.7	301.4	381.1	300.0	379.2	57.6	60.2
G16	82.1	79.0	82.2	69.0	0.10	-0.11	0.08	-	129.8	299.6	389.7	300.0	390.2	61.2	60.2
Avg.	82.6	79.5	83.2	69.9	0.06	-0.09	-0.10	-	120.1	300.3	353.9	300.0	353.5	58.9	60.2
Std Dv	0.5	0.4	0.6	0.6	0.09	0.05	0.14	-	10.0	1.4	28.5	0.0	28.4	1.8	0.0
90% CI	0.3	0.3	0.4	0.5	0.07	0.04	0.10	-	7.4	1.0	20.9	0.0	20.8	1.3	0.0

Table C.2

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/25/85

CORRECTION DATA

SITE: 1 CENTERLINE - CENTER AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh															
H17	88.3	84.7	91.6	77.8	0.17	-0.06	-0.10	0.73	124.5	149.0	180.8	150.0	182.0	65.0	66.9
H18	87.7	83.9	90.5	77.0	-1.66	-1.78	0.45	0.59	119.3	124.4	142.6	150.0	172.0	64.5	66.9
H19	87.6	83.9	90.1	76.2	-0.84	-1.03	0.16	0.47	114.5	134.1	147.4	150.0	164.8	63.8	66.9
H20	87.2	83.4	90.2	76.6	-1.26	-1.44	0.26	0.62	120.2	128.4	148.6	150.0	173.5	63.3	66.9
H21	88.0	84.3	91.2	77.5	-0.20	-0.44	-0.17	0.65	121.0	142.9	166.7	150.0	175.0	62.0	66.9
Avg.	87.8	84.1	90.7	77.0	-0.76	-0.95	0.12	0.61	119.9	135.8	157.2	150.0	173.5	63.7	66.9
Std Dv	0.5	0.5	0.7	0.7	0.75	0.70	0.26	0.09	3.6	10.2	16.0	0.0	6.2	1.1	0.0
90% CI	0.5	0.5	0.6	0.6	0.71	0.67	0.24	0.09	3.4	9.7	15.3	0.0	5.9	1.1	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
A1	87.2	83.8	89.4	76.0	-1.64	-1.66	0.54	0.10	125.2	126.8	155.2	150.0	183.5	60.0	60.2
A2	87.2	83.9	89.3	75.8	-2.46	-2.42	0.79	0.07	142.4	118.0	193.3	150.0	245.7	60.3	60.2
A4	87.2	83.9	88.7	75.5	-1.70	-1.65	0.57	0.13	136.7	127.5	185.8	150.0	218.6	60.7	60.2
A5	86.6	83.2	89.4	75.5	-1.49	-1.46	0.27	0.07	124.5	129.5	157.2	150.0	182.1	57.3	60.2
A6	86.6	83.3	88.9	75.6	-1.99	-1.92	0.28	0.16	134.7	123.7	174.2	150.0	211.1	55.6	60.2
A7	86.3	83.2	88.9	75.6	-1.48	-1.45	0.36	0.16	114.8	129.4	142.5	150.0	165.3	58.5	60.2
A8	86.8	83.6	89.1	75.5	-1.81	-1.77	0.43	0.23	139.2	125.9	192.9	150.0	229.8	58.3	60.2
Avg.	86.8	83.6	89.1	75.6	-1.80	-1.76	0.46	0.13	131.1	125.8	171.6	150.0	205.2	58.7	60.2
Std Dv	0.4	0.3	0.3	0.2	0.34	0.33	0.19	0.06	9.8	4.0	20.2	0.0	29.0	1.8	0.0
90% CI	0.3	0.2	0.2	0.1	0.25	0.25	0.14	0.04	7.2	2.9	14.9	0.0	21.3	1.3	0.0
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh															
I22	85.1	81.6	86.9	73.3	-0.36	-0.55	-0.03	0.40	125.6	141.4	173.9	150.0	184.5	50.8	53.5
I24	86.1	82.6	88.7	75.1	0.03	-0.14	-0.16	0.43	129.6	147.9	192.1	150.0	194.7	51.1	53.5
I25	85.9	82.4	89.4	74.9	-0.44	-0.61	-0.02	0.46	136.8	140.8	205.9	150.0	219.2	50.8	53.5
I26	86.8	83.6	89.0	75.6	-0.80	-0.92	0.09	0.52	122.2	136.0	160.7	150.0	177.2	50.7	53.5
Avg.	86.0	82.5	88.5	74.7	-0.39	-0.55	-0.03	0.45	128.6	141.5	183.1	150.0	193.9	50.8	53.5
Std Dv	0.7	0.9	1.1	1.0	0.34	0.32	0.10	0.05	6.3	4.9	19.9	0.0	18.4	0.2	0.0
90% CI	0.8	1.0	1.3	1.2	0.40	0.38	0.12	0.06	7.4	5.7	23.4	0.0	21.6	0.2	0.0
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh															
J27										NO TRACKING DATA					
J28	87.1	83.8	98.1	75.4	-0.03	-0.23	0.05	0.39	117.3	145.6	163.9	150.0	168.9	46.3	46.8
J29	87.8	85.1	89.4	76.3	-0.35	-0.53	0.05	0.62	133.5	141.3	194.7	150.0	206.6	45.3	46.8
J30	87.1	84.1	89.4	75.8	0.08	-0.14	0.01	0.39	133.1	147.3	201.7	150.0	205.4	46.3	46.8
J31	88.0	85.3	90.9	78.9	0.13	-0.09	-0.04	0.51	134.6	148.2	208.0	150.0	210.5	46.0	46.8
Avg.	87.5	84.6	89.5	76.6	-0.04	-0.25	0.02	0.48	129.6	145.6	192.1	150.0	197.9	46.0	46.8
Std Dv	0.5	0.8	1.1	1.6	0.22	0.20	0.04	0.11	8.2	3.1	19.6	0.0	19.4	0.5	0.0
90% CI	0.6	0.9	1.3	1.8	0.25	0.23	0.05	0.13	9.7	3.6	23.0	0.0	22.9	0.5	0.0

Table C.3

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
C32	91.9	89.0	91.1	77.8	0.49	0.28	0.26	-	113.4	197.1	214.7	191.7	208.9	31.8	29.3
C34	91.1	88.3	91.9	78.2	0.34	0.17	0.11	-	120.5	195.0	226.2	191.7	222.4	30.4	29.3
C36	91.7	89.0	91.5	77.8	0.16	0.01	0.07	-	108.8	191.7	202.5	191.7	202.5	29.8	29.3
C38	91.7	88.8	91.7	78.0	0.31	0.12	-0.17	-	101.3	193.4	197.2	191.7	195.4	28.4	29.3
C40	90.4	87.6	91.7	78.0	0.23	0.06	0.05	-	113.4	192.5	209.8	191.7	208.9	29.7	29.3
C42	88.9	86.0	88.4	75.7	-0.01	-0.13	-0.06	-	96.6	188.6	189.9	191.7	192.9	28.6	29.3
C44	90.6	88.0	89.4	76.2	-0.35	-0.43	0.04	-	125.1	182.9	223.6	191.7	234.3	28.6	29.3
C46	92.4	89.8	91.8	79.0	0.25	0.07	-0.02	-	99.4	192.7	195.3	191.7	194.3	29.3	29.3
C48	90.5	87.6	91.2	77.9	0.34	0.12	0.11	-	103.9	193.4	199.2	191.7	197.5	30.2	29.3
C50	90.8	87.9	90.4	77.6	0.01	-0.17	0.26	-	109.8	187.5	199.4	191.7	203.8	30.6	29.3
Avg.	91.0	88.2	90.9	77.6	0.18	0.01	0.06	-	109.2	191.5	205.8	191.7	206.1	29.7	29.3
Std Dv	1.0	1.0	1.2	1.0	0.24	0.20	0.13	-	9.2	4.1	12.3	0.0	13.3	1.1	0.0
90% CI	0.6	0.6	0.7	0.6	0.14	0.12	0.08	-	5.3	2.4	7.1	0.0	7.7	0.6	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
B33	86.6	83.3	87.8	73.2	-0.86	-0.98	0.12	-	94.3	191.6	192.2	212.8	213.4	27.9	29.3
B37	87.1	83.8	87.7	73.1	-0.76	-0.90	-0.33	-	100.3	192.9	196.0	212.8	216.2	25.3	29.3
B39	87.5	83.4	88.8	73.4	-0.14	-0.33	-0.52	-	95.2	204.0	204.9	212.8	213.7	25.2	29.3
B41	86.9	83.9	88.0	74.3	-1.04	-1.17	-0.16	-	98.4	188.1	190.1	212.8	215.1	25.8	29.3
B43	85.7	82.0	86.7	71.5	-0.29	-0.42	-0.53	-	106.2	202.9	211.3	212.8	221.6	25.1	29.3
B45	87.0	83.5	87.9	72.8	-0.48	-0.64	-0.29	-	95.0	198.4	199.1	212.8	213.6	26.0	29.3
B47	87.3	83.6	88.6	73.9	-0.21	-0.42	-0.86	-	102.5	202.4	207.3	212.8	217.9	23.1	29.3
B49	87.2	83.6	87.7	73.5	-0.75	-0.96	-0.10	-	95.2	191.3	192.1	212.8	213.6	26.4	29.3
B52	86.7	83.4	87.1	72.6	-0.79	-0.90	-0.14	-	97.1	192.7	194.2	212.8	214.4	26.3	29.3
Avg.	86.9	83.4	87.8	73.1	-0.59	-0.75	-0.31	-	98.3	196.0	198.6	212.8	215.5	25.7	29.3
Std Dv	0.5	0.6	0.7	0.8	0.32	0.30	0.29	-	4.1	5.9	7.6	0.0	2.7	1.3	0.0
90% CI	0.3	0.3	0.4	0.5	0.20	0.19	0.18	-	2.5	3.7	4.7	0.0	1.7	0.8	0.0
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
B9	83.9	80.0	85.0	70.1	-0.07	-0.16	-0.24	-	115.0	336.2	370.9	336.6	371.4	56.9	60.2
B10	82.2	79.4	81.4	67.8	-0.13	-0.22	0.15	-	138.6	335.4	506.8	336.6	508.6	62.1	60.2
B11	84.4	80.3	86.2	71.4	-0.14	-0.26	-0.11	-	119.7	333.2	383.8	336.6	387.7	58.2	60.2
B13	83.3	79.4	84.3	69.6	0.00	-0.15	-0.23	-	122.4	336.4	398.5	336.6	398.8	57.1	60.2
B14	82.7	79.8	82.0	68.8	0.11	-0.10	-0.03	-	94.4	336.7	337.7	336.6	337.6	59.8	60.2
B15	84.1	80.3	84.6	69.1	0.04	-0.12	-0.19	-	120.7	336.4	391.4	336.6	391.6	57.6	60.2
B16	82.2	79.1	81.6	68.6	0.08	-0.14	0.08	-	136.4	336.4	487.4	336.6	487.7	61.2	60.2
Avg.	83.3	79.8	83.6	69.4	-0.02	-0.16	-0.08	-	121.0	335.8	410.9	336.6	411.9	59.0	60.2
Std Dv	0.9	0.5	1.9	1.2	0.10	0.06	0.15	-	14.7	1.2	62.3	0.0	62.5	2.1	0.0
90% CI	0.7	0.4	1.4	0.9	0.07	0.04	0.11	-	10.8	0.9	45.7	0.0	45.9	1.5	0.0

Table C.4

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh															
H17	89.3	85.6	90.6	76.6	0.16	-0.07	-0.31	1.30	110.9	211.4	226.3	212.1	227.1	62.0	66.9
H18	89.0	85.5	90.6	76.9	-0.61	-0.84	0.14	1.18	106.8	194.8	203.5	212.1	221.6	64.9	66.9
H19	88.3	84.6	90.0	76.3	-0.30	-0.52	-0.01	0.84	111.5	201.2	216.2	212.1	227.9	64.2	66.9
H20	89.1	85.5	91.0	77.5	-0.39	-0.67	0.00	1.25	122.7	197.4	234.7	212.1	252.2	63.3	66.9
H21	90.1	86.2	91.3	77.3	0.04	-0.22	-0.25	1.16	107.6	207.1	217.3	212.1	222.5	62.0	66.9
Avg.	89.1	85.5	90.7	76.9	-0.22	-0.46	-0.09	1.15	111.9	202.4	219.6	212.1	230.3	63.3	66.9
Std Dv	0.6	0.6	0.5	0.5	0.32	0.32	0.19	0.18	6.4	6.8	11.7	0.0	12.6	1.3	0.0
90% CI	0.6	0.5	0.5	0.5	0.30	0.30	0.18	0.17	6.1	6.5	11.2	0.0	12.0	1.2	0.0
150 m. FLYOVER -- TARGET IAS 117KTS. -- 0.9Vh															
A1	87.4	83.9	88.2	74.2	-0.78	-0.95	0.29	0.18	126.1	196.4	243.2	212.1	262.6	60.7	60.2
A2	86.6	83.1	87.6	73.9	-1.29	-1.32	0.44	0.15	100.3	187.6	190.6	212.1	215.6	60.9	60.3
A4	86.6	83.2	87.7	74.1	-0.95	-0.97	0.32	0.27	108.8	194.6	205.6	212.1	224.1	60.7	60.2
A5	87.1	84.0	87.6	73.9	-0.87	-0.84	0.17	0.13	106.8	198.1	207.0	212.1	221.6	59.5	60.2
A6	86.3	82.8	87.3	73.9	-1.00	-1.01	-0.05	0.33	107.3	193.8	203.0	212.1	222.2	55.6	60.2
A7	87.2	83.7	88.3	74.5	-0.76	-0.83	0.16	0.29	113.8	198.0	216.5	212.1	231.9	59.3	60.2
A8	86.3	83.0	87.2	73.9	-0.99	-1.00	0.15	0.46	112.1	193.8	209.2	212.1	229.0	58.3	60.2
Avg.	86.8	83.4	87.7	74.1	-0.95	-0.99	0.21	0.26	110.8	194.6	210.7	212.1	229.6	59.3	60.2
Std Dv	0.4	0.5	0.4	0.2	0.18	0.16	0.16	0.12	8.0	3.6	16.3	0.0	15.5	1.9	0.1
90% CI	0.3	0.3	0.3	0.2	0.13	0.12	0.11	0.09	5.9	2.7	12.0	0.0	11.4	1.4	0.0
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh															
122	85.2	81.7	85.8	72.4	-0.01	-0.25	-0.11	0.81	98.9	206.1	208.6	212.1	214.7	51.1	53.5
124	85.1	81.9	86.2	72.4	0.13	-0.06	-0.16	0.86	96.9	210.6	212.2	212.1	213.7	51.2	53.5
125	86.7	82.9	88.0	73.8	-0.14	-0.31	0.12	0.82	107.4	205.7	215.6	212.1	222.3	53.7	53.5
126	86.1	82.7	86.7	73.4	-0.27	-0.52	-0.03	1.04	148.5	202.5	387.1	212.1	405.5	51.3	53.5
Avg.	85.7	82.3	86.7	73.0	-0.07	-0.28	-0.05	0.88	112.9	206.2	255.9	212.1	264.1	51.8	53.5
Std Dv	0.8	0.6	1.0	0.7	0.17	0.19	0.12	0.11	24.1	3.4	87.5	0.0	94.4	1.3	0.0
90% CI	0.9	0.7	1.1	0.8	0.20	0.22	0.14	0.13	28.4	3.9	102.9	0.0	111.0	1.5	0.0
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh															
J27	86.4	83.1	87.8	73.6	-0.01	-0.21	0.14	0.70	116.0	206.4	229.8	212.1	236.0	47.3	46.8
J28	85.9	82.7	86.6	73.1	0.04	-0.20	0.09	0.78	97.2	206.4	208.1	212.1	213.8	46.3	46.3
J29	85.6	82.0	86.6	72.7	-0.02	-0.21	-0.04	1.11	115.6	206.1	228.6	212.1	235.3	45.4	46.8
J30	85.2	81.8	85.5	71.4	0.17	-0.04	-0.02	0.79	113.6	210.2	229.4	212.1	231.4	46.3	46.8
J31	87.3	83.7	90.0	76.0	0.20	-0.02	-0.05	0.91	127.3	210.9	265.0	212.1	266.6	46.1	46.8
Avg.	86.1	82.7	87.3	73.4	0.08	-0.14	0.02	0.86	114.0	208.0	232.2	212.1	236.6	46.3	46.7
Std Dv	0.8	0.8	1.7	1.7	0.10	0.10	0.09	0.16	10.8	2.3	20.5	0.0	19.1	0.7	0.2
90% CI	0.8	0.7	1.6	1.6	0.10	0.09	0.08	0.15	10.3	2.2	19.6	0.0	18.2	0.7	0.2

Table C.5

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
C32	-	82.7	86.1	71.0	0.20	-0.02	-	-	91.0	189.9	189.9	191.7	191.7	31.1	29.3
C34	88.1	84.2	87.9	73.4	0.40	0.19	0.28	-	97.8	195.0	196.8	191.7	193.4	31.7	29.3
C36										NO TRACKING DATA					
C38										NO TRACKING DATA					
C40	87.9	83.8	88.6	73.2	0.44	0.14	0.12	-	124.1	192.5	232.5	191.7	231.5	30.2	29.3
C42	87.4	83.7	88.0	73.7	-0.06	-0.13	-0.14	-	111.8	188.6	203.1	191.7	206.4	28.0	29.3
C44	87.1	83.7	85.7	72.0	-0.10	-0.16	-0.46	-	108.4	188.0	198.0	191.7	202.0	26.0	29.3
C46	86.6	82.7	87.2	71.9	0.46	0.25	-0.07	-	93.8	195.4	195.8	191.7	192.1	29.3	29.3
C48	86.5	83.3	86.4	73.0	0.46	0.24	0.00	-	124.2	195.5	236.5	191.7	231.8	29.8	29.3
C50	86.9	83.1	85.5	71.5	0.59	0.32	0.16	-	109.2	196.7	208.2	191.7	203.0	31.0	29.3
Avg.	87.2	83.4	86.9	72.5	0.30	0.10	-0.02	-	107.5	192.7	207.6	191.7	206.5	29.6	29.3
Std Dv	0.6	0.5	1.2	1.0	0.26	0.18	0.24	-	12.7	3.4	17.5	0.0	16.5	1.9	0.0
90% CI	0.5	0.4	0.8	0.7	0.17	0.12	0.18	-	8.5	2.3	11.7	0.0	11.0	1.3	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
B33	87.0	83.4	88.6	72.6	-0.50	-0.69	0.03	-	91.1	197.0	197.0	212.8	212.8	27.9	29.3
B37										NO TRACKING DATA					
B39	86.7	83.0	87.9	72.0	-0.14	-0.27	-0.55	-	91.9	205.0	205.1	212.8	212.9	25.1	29.3
B41	86.0	82.6	86.9	72.0	-0.81	-0.86	-0.19	-	110.1	193.8	206.4	212.8	226.5	26.2	29.3
B43	85.7	82.0	87.2	71.6	-0.35	-0.42	-0.43	-	103.8	202.9	208.9	212.8	219.1	25.6	29.3
B45	85.9	92.2	87.2	71.3	-0.56	-0.68	-0.30	-	90.1	197.2	197.2	212.8	212.8	25.9	29.3
B47	86.4	82.3	87.9	72.0	-0.22	-0.42	-0.63	-	99.9	202.4	205.4	212.8	216.0	24.4	29.3
B49	86.5	82.9	88.2	72.2	-0.48	-0.69	-0.16	-	91.9	196.0	196.1	212.8	212.9	26.6	29.3
B52	85.7	82.1	86.2	70.7	-0.51	-0.65	-0.13	-	93.4	197.2	197.5	212.8	213.1	26.9	29.3
Avg.	86.2	82.6	87.5	71.8	-0.45	-0.58	-0.29	-	96.5	198.9	201.7	212.8	215.8	26.1	29.3
Std Dv	0.5	0.5	0.8	0.6	0.21	0.19	0.23	-	7.3	4.0	5.2	0.0	4.9	1.1	0.0
90% CI	0.3	0.3	0.5	0.4	0.14	0.13	0.15	-	4.9	2.7	3.5	0.0	3.3	0.7	0.0
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
G9	81.9	78.7	81.7	69.1	-0.04	-0.17	-0.29	-	118.7	336.2	383.1	336.6	383.6	56.2	60.2
G10	84.7	80.5	85.6	70.2	-0.05	-0.16	0.05	-	116.6	335.4	375.2	336.6	376.6	60.6	60.2
G11										NO TRACKING DATA					
G13	82.4	78.9	81.3	67.7	0.13	-0.07	-0.23	-	100.4	337.2	342.8	336.6	342.2	57.1	60.2
G14	85.1	80.7	86.4	70.3	0.20	-0.04	0.00	-	116.8	336.7	377.3	336.6	377.3	60.2	60.2
G15	82.5	78.7	81.9	68.5	0.27	-0.05	-0.20	-	114.4	337.2	370.4	336.6	369.8	57.6	60.2
G16	84.8	80.0	86.1	70.7	0.24	-0.06	0.07	-	126.4	337.2	418.9	336.6	418.1	61.2	60.2
Avg.	83.6	79.6	83.8	69.4	0.12	-0.09	-0.10	-	115.6	336.7	378.0	336.6	377.9	58.8	60.2
Std Dv	1.4	0.9	2.4	1.2	0.14	0.06	0.16	-	8.5	0.7	24.5	0.0	24.5	2.1	0.0
90% CI	1.2	0.8	2.0	1.0	0.12	0.05	0.13	-	7.0	0.6	20.1	0.0	20.1	1.7	0.0

Table C.6

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
7/26/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh															
H17	88.6	85.0	90.2	77.2	0.29	-0.03	-0.31	1.47	113.5	211.4	230.6	212.1	231.4	62.0	66.9
H18	89.1	85.2	90.3	76.1	-0.58	-0.84	0.13	1.05	109.4	194.8	206.6	212.1	225.0	64.6	66.9
H19	88.3	84.5	90.3	76.1	-0.19	-0.48	-0.01	0.95	109.6	201.2	213.6	212.1	225.2	64.2	66.9
H20	89.4	85.5	90.8	76.7	-0.36	-0.67	0.04	1.11	105.6	197.4	205.0	212.1	220.2	63.9	66.9
H21	88.6	84.8	90.0	76.6	0.14	-0.19	-0.29	1.31	113.9	207.1	226.6	212.1	232.0	61.5	66.9
Avg.	88.8	85.0	90.3	76.5	-0.14	-0.44	-0.09	1.18	110.4	202.4	216.5	212.1	226.7	63.3	66.9
Std Dv	0.5	0.4	0.3	0.4	0.36	0.33	0.20	0.21	3.4	6.8	11.6	0.0	4.9	1.4	0.0
90% CI	0.5	0.4	0.3	0.4	0.34	0.32	0.19	0.20	3.3	6.5	11.1	0.0	4.7	1.3	0.0
150 M. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
A1	86.6	83.1	87.6	74.2	-0.77	-0.86	0.28	0.20	109.7	196.4	208.6	212.1	225.3	60.6	60.2
A2	87.2	83.5	87.4	73.2	-1.29	-1.37	0.40	0.13	121.4	188.1	220.4	212.1	248.6	60.3	60.2
A4	87.9	84.2	88.4	73.9	-0.92	-1.00	0.31	0.24	124.1	195.2	235.7	212.1	256.2	60.7	60.2
A5	85.5	82.2	85.7	73.1	-2.55	-2.45	0.74	0.15	124.3	167.9	203.3	212.1	256.8	59.9	60.2
A6	87.1	83.5	88.1	74.0	-0.98	-1.06	-0.06	0.29	124.8	194.4	236.8	212.1	258.4	55.6	60.2
A7	86.3	82.9	87.7	74.4	-0.76	-0.77	0.00	0.33	94.4	198.0	198.6	212.1	212.7	57.1	60.2
A8	87.4	83.8	87.8	73.4	-1.00	-1.06	0.14	0.41	129.2	194.4	250.9	212.1	273.8	58.3	60.2
Avg.	86.9	83.3	87.5	73.7	-1.18	-1.22	0.26	0.25	118.3	190.6	222.1	212.1	247.4	58.9	60.2
Std Dv	0.8	0.6	0.9	0.5	0.63	0.57	0.27	0.10	12.2	10.5	19.7	0.0	21.1	2.0	0.0
90% CI	0.6	0.5	0.6	0.4	0.46	0.42	0.20	0.07	8.9	7.7	14.4	0.0	15.5	1.4	0.0
150 M. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh															
I22	86.3	82.5	87.1	72.6	-0.05	-0.27	-0.06	0.72	104.4	206.1	212.8	212.1	219.0	51.6	53.5
I24	86.9	82.8	88.1	73.3	0.15	-0.08	-0.21	0.76	105.2	210.6	218.3	212.1	219.8	50.7	53.5
I25	85.4	81.8	86.3	73.1	-0.06	-0.30	-0.04	0.93	115.6	205.7	228.0	212.1	235.1	51.9	53.5
I26											NO TRACKING DATA				
Avg.	86.2	82.4	87.2	73.0	0.01	-0.22	-0.10	0.80	108.4	207.5	219.7	212.1	224.7	51.4	53.5
Std Dv	0.8	0.5	0.9	0.4	0.12	0.12	0.09	0.11	6.2	2.7	7.7	0.0	9.1	0.6	0.0
90% CI	1.3	0.9	1.5	0.6	0.20	0.20	0.16	0.19	10.5	4.6	13.0	0.0	15.3	1.0	0.0
150 M. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh															
J27	86.1	82.2	86.5	72.8	0.06	-0.19	0.14	0.79	112.0	206.5	222.7	212.1	228.8	47.3	46.8
J28	86.4	82.4	86.5	72.0	0.06	-0.19	0.09	0.70	109.8	206.5	219.4	212.1	225.4	46.3	46.3
J29	84.7	81.1	85.6	71.7	0.01	-0.21	-0.04	1.26	117.8	206.1	232.9	212.1	239.8	45.4	46.8
J30	85.9	81.9	86.6	71.8	0.23	-0.02	0.02	0.70	105.7	210.2	218.4	212.1	220.4	46.7	46.8
J31	85.3	81.9	87.0	72.9	0.23	-0.01	-0.04	1.02	129.9	210.9	274.7	212.1	276.4	46.2	46.8
Avg.	85.7	81.9	86.4	72.2	0.12	-0.12	0.03	0.89	115.0	208.0	233.6	212.1	238.1	46.4	46.7
Std Dv	0.7	0.5	0.5	0.6	0.10	0.10	0.08	0.24	9.4	2.3	23.7	0.0	22.5	0.7	0.2
90% CI	0.6	0.5	0.5	0.5	0.10	0.10	0.08	0.23	8.9	2.2	22.6	0.0	21.5	0.7	0.2

Table C.7

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 4

CENTERLINE - 150 M. WEST

AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
C32	93.4	90.1	94.5	81.4	0.55	0.36	0.22	-	116.0	140.4	156.2	135.0	150.2	31.7	29.3
C34	93.1	90.6	92.9	80.6	0.47	0.25	0.04	-	138.4	138.5	208.7	135.0	203.4	30.1	29.3
C36	91.2	88.4	94.0	81.1	0.10	-0.03	0.22	-	118.2	134.5	152.6	135.0	153.2	30.8	29.3
C38	91.3	88.5	92.5	79.5	0.50	0.27	-0.20	-	138.4	138.5	208.7	135.0	203.4	28.6	29.3
C40	92.1	89.7	92.0	80.5	-0.27	-0.39	0.08	-	142.5	129.2	212.5	135.0	222.0	28.9	29.3
C42	90.9	88.3	92.9	81.1	-0.82	-0.94	0.37	-	147.7	122.1	228.5	135.0	252.7	29.6	29.3
C44	92.5	90.2	92.6	80.0	-0.64	-0.69	0.16	-	121.9	125.1	147.4	135.0	159.1	28.8	29.3
C46	91.4	88.4	91.8	79.0	0.86	0.65	-0.17	-	127.2	144.7	181.7	135.0	169.5	29.7	29.3
C48	90.3	87.4	88.6	75.9	1.08	0.79	0.28	-	132.3	146.5	198.1	135.0	182.6	33.2	29.3
C50	92.0	89.2	92.3	79.6	-0.07	-0.20	0.16	-	119.5	131.8	151.3	135.0	155.1	29.9	29.3
Avg.	91.8	89.1	92.4	79.9	0.18	0.01	0.12	-	130.2	135.1	184.6	135.0	185.1	30.1	29.3
Std Dv	1.0	1.0	1.6	1.6	0.63	0.56	0.13	-	11.2	8.1	30.5	0.0	34.4	1.5	0.0
90% CI	0.6	0.6	0.9	0.9	0.36	0.33	0.11	-	6.5	4.7	17.7	0.0	20.0	0.8	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
B33	85.2	81.9	86.2	72.5	-1.23	-1.38	0.41	-	95.8	164.7	165.6	190.4	191.4	28.9	29.3
B37	85.3	81.8	85.8	71.3	-2.00	-2.05	0.18	-	104.9	153.5	158.8	190.4	197.0	26.0	29.3
B39	85.6	81.9	86.7	71.6	0.08	-0.15	-0.55	-	93.6	184.7	185.1	190.4	190.7	25.3	29.3
B41	84.9	81.9	84.9	71.3	-1.47	-1.56	0.04	-	97.2	161.5	162.8	190.4	191.9	26.1	29.3
B43	85.4	82.3	85.5	70.9	-0.99	-1.08	0.50	-	105.5	169.6	176.0	190.4	197.6	30.1	29.3
B45	85.5	82.2	87.0	72.9	-0.83	-0.96	-0.21	-	103.2	171.5	176.1	190.4	195.5	25.8	29.3
B47	85.6	81.8	86.4	71.9	-0.53	-0.70	-0.72	-	98.7	175.4	177.4	190.4	192.6	23.4	29.3
B49	85.6	81.9	86.4	71.8	-1.11	-1.28	-0.18	-	96.8	165.2	166.4	190.4	191.7	25.3	29.3
B52	84.7	81.5	85.8	71.2	-1.38	-1.48	0.20	-	97.0	162.1	163.3	190.4	191.8	27.2	29.3
Avg.	85.3	81.9	86.1	71.7	-1.05	-1.18	-0.04	-	99.2	167.6	170.2	190.4	193.4	26.5	29.3
Std Dv	0.3	0.2	0.6	0.6	0.59	0.55	0.41	-	4.3	9.0	8.7	0.0	2.6	2.0	0.0
90% CI	0.2	0.2	0.4	0.4	0.37	0.34	0.26	-	2.7	5.6	5.4	0.0	1.6	1.3	0.0
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
G9	83.6	80.8	83.3	71.0	-0.15	-0.20	-0.19	-	118.8	297.4	339.4	300.0	342.3	57.2	60.2
G10	83.1	80.4	82.9	69.6	-0.62	-0.67	0.27	-	113.3	283.7	308.8	300.0	326.6	61.4	60.2
G11	82.6	79.9	83.3	70.9	-0.51	-0.60	-0.11	-	123.3	286.5	343.0	300.0	359.1	56.7	60.2
G13										NO TRACKING DATA					
G14	83.3	80.4	84.4	70.8	-0.12	-0.28	0.12	-	117.7	294.4	332.6	300.0	338.9	61.0	60.2
G15	83.0	79.9	82.9	69.9	0.07	-0.15	-0.17	-	126.1	298.6	369.3	300.0	371.1	57.6	60.2
G16	83.5	80.5	83.5	70.3	0.09	-0.13	0.09	-	125.8	298.6	368.2	300.0	369.9	61.2	60.2
Avg.	83.2	80.3	83.4	70.4	-0.21	-0.34	0.00	-	120.8	293.2	343.5	300.0	351.3	59.2	60.2
Std Dv	0.3	0.3	0.6	0.6	0.30	0.24	0.19	-	5.1	6.5	22.9	0.0	18.1	2.2	0.0
90% CI	0.3	0.3	0.5	0.5	0.24	0.19	0.15	-	4.2	5.4	18.8	0.0	14.9	1.8	0.0

Table C.8

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 4 CENTERLINE - 150 M. WEST AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh															
H17	88.5	85.0	91.2	77.8	0.17	-0.08	-0.25	0.73	129.9	149.0	194.1	150.0	195.4	62.8	66.9
H18	89.9	86.2	93.5	79.5	0.28	-0.03	-0.25	0.73	129.9	149.0	194.1	150.0	195.4	62.8	66.9
H19	88.4	85.0	91.2	77.7	-0.78	-1.02	0.22	0.47	132.1	134.8	181.6	150.0	202.1	64.9	66.9
H20	88.2	84.8	91.3	77.7	-1.40	-1.58	0.41	0.62	121.9	126.8	149.4	150.0	176.8	64.7	66.9
H21	88.9	85.5	91.5	78.4	-0.12	-0.32	-0.03	0.65	105.7	144.7	150.3	150.0	155.8	64.7	66.9
Avg.	88.8	85.3	91.7	78.2	-0.37	-0.61	0.02	0.64	123.9	140.8	173.9	150.0	185.1	64.0	66.9
Std Dv	0.7	0.6	1.0	0.8	0.71	0.67	0.29	0.11	10.9	9.8	22.5	0.0	18.9	1.1	0.0
90% CI	0.7	0.6	1.0	0.7	0.68	0.64	0.28	0.10	10.4	9.3	21.5	0.0	18.0	1.1	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
A1	87.1	83.8	89.5	76.3	-1.41	-1.44	0.29	0.10	131.1	130.1	172.6	150.0	198.9	57.8	60.2
A2	87.9	84.6	91.0	77.0	-1.71	-1.72	0.56	0.07	140.1	126.8	197.5	150.0	233.7	60.3	60.2
A4	87.3	84.3	89.4	76.2	-1.93	-1.89	0.64	0.13	137.2	124.8	183.7	150.0	220.8	60.7	60.2
A5	86.9	83.6	89.4	75.9	-1.67	-1.64	0.60	0.07	125.0	127.1	155.3	150.0	183.2	61.1	60.2
A6	86.7	83.6	89.4	76.1	-2.28	-2.19	0.41	0.16	139.2	120.7	184.8	150.0	229.7	56.1	60.2
A7	86.9	83.8	89.3	76.1	-1.55	-1.52	0.29	0.16	126.4	128.7	159.8	150.0	186.2	57.3	60.2
A8	86.7	83.6	89.4	75.3	-2.19	-2.13	0.56	0.23	136.9	121.1	177.3	150.0	219.6	58.3	60.2
Avg.	87.1	83.9	89.6	76.1	-1.82	-1.79	0.48	0.13	133.7	125.6	175.9	150.0	210.3	58.8	60.2
Std Dv	0.4	0.4	0.6	0.5	0.33	0.29	0.15	0.06	6.2	3.6	14.8	0.0	20.7	1.9	0.0
90% CI	0.3	0.3	0.4	0.4	0.24	0.21	0.11	0.04	4.5	2.7	10.8	0.0	15.2	1.4	0.0
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh															
I22	85.9	82.8	87.5	74.1	-0.48	-0.65	0.07	0.40	124.0	139.9	168.9	150.0	181.0	51.6	53.5
I24	86.2	83.0	88.3	74.2	-0.02	-0.15	-0.16	0.43	112.2	147.6	159.4	150.0	162.0	50.9	53.5
I25	85.7	82.4	88.2	74.9	-0.65	-0.81	0.06	0.46	128.6	137.8	176.3	150.0	191.9	50.9	53.5
I26	87.0	83.7	91.5	77.9	-1.02	-1.11	0.20	0.52	121.2	133.3	155.8	150.0	175.3	51.3	53.5
Avg.	86.2	83.0	88.9	75.3	-0.54	-0.68	0.04	0.45	121.5	139.7	165.1	150.0	177.6	51.2	53.5
Std Dv	0.6	0.6	1.8	1.8	0.41	0.40	0.15	0.05	6.9	5.9	9.3	0.0	12.4	0.4	0.0
90% CI	0.7	0.7	2.1	2.1	0.49	0.47	0.18	0.06	8.1	7.0	10.9	0.0	14.6	0.4	0.0
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh															
J27	85.6	83.0	89.1	76.5	-0.21	-0.30	-0.07	0.39	146.7	145.3	264.4	150.0	273.0	45.0	46.8
J28	87.7	84.9	90.5	78.0	0.15	-0.13	0.01	0.39	142.0	147.3	239.4	150.0	243.7	46.3	46.8
J29	87.3	84.7	89.1	76.6	-0.22	-0.46	0.21	0.39	143.5	142.6	239.9	150.0	252.3	47.3	46.8
J30	86.8	84.0	89.4	76.1	-0.02	-0.26	0.04	0.39	131.5	145.3	194.1	150.0	200.4	46.1	46.8
J31	87.4	84.7	89.1	76.5	0.38	0.07	-0.06	0.51	143.2	150.5	251.4	150.0	250.6	46.3	46.8
Avg.	86.9	84.3	89.5	76.7	0.02	-0.22	0.03	0.41	141.4	146.2	237.9	150.0	244.0	46.2	46.8
Std Dv	0.8	0.8	0.6	0.7	0.25	0.20	0.11	0.05	5.8	2.9	26.5	0.0	26.7	0.8	0.0
90% CI	0.8	0.7	0.6	0.7	0.24	0.19	0.11	0.05	5.5	2.8	25.3	0.0	25.5	0.8	0.0

Table C.22

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CC10	91.8	88.9	93.4	80.7	0.33	0.30	-0.07	-	125.3	140.0	171.6	135.0	165.5	29.6	29.3
CC12	90.9	88.0	92.1	78.9	0.01	-0.01	0.13	-	117.2	135.3	152.1	135.0	151.8	30.2	29.3
CC14	89.8	86.9	90.2	76.2	-0.11	-0.12	0.10	-	92.3	133.7	133.8	135.0	135.1	29.8	29.3
CC16	91.3	88.6	92.9	80.1	0.32	0.28	0.08	-	129.9	139.3	181.6	135.0	176.0	30.6	29.3
CC18	92.5	90.1	93.3	81.4	-1.65	-1.56	0.83	-	130.6	113.9	149.9	135.0	177.8	31.3	29.3
CC20	92.1	89.7	93.6	81.1	-0.05	-0.06	0.18	-	128.1	134.2	170.4	135.0	171.5	30.4	29.3
CC22	93.1	90.7	93.5	81.6	-1.10	-1.06	0.46	-	140.2	120.4	188.2	135.0	211.0	29.9	29.3
CC24	93.0	90.5	95.0	82.2	0.65	0.60	-0.11	-	124.4	144.1	174.7	135.0	163.7	30.0	29.3
Avg.	91.8	89.2	93.0	80.3	-0.20	-0.20	0.20	-	123.5	132.6	165.3	135.0	169.1	30.2	29.3
Std Dv	1.1	1.3	1.4	1.9	0.78	0.73	0.31	-	14.2	10.3	18.3	0.0	22.0	0.5	0.0
90% CI	0.8	0.9	0.9	1.3	0.52	0.49	0.21	-	9.5	6.9	12.3	0.0	14.7	0.4	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CZ31	92.8	90.3	91.8	80.4	-0.31	-0.31	0.27	-	135.9	130.5	187.3	135.0	193.9	30.4	29.3
CZ33	92.6	89.9	92.7	80.3	1.04	0.96	-0.20	-	122.4	149.7	177.3	135.0	159.9	30.2	29.3
CZ35	92.2	89.7	94.2	81.5	-0.26	-0.26	-0.05	-	121.1	131.0	152.9	135.0	157.6	28.3	29.3
CZ37	92.6	90.1	93.7	81.8	0.72	0.66	-0.10	-	133.0	144.6	197.7	135.0	184.6	30.1	29.3
CZ39	91.3	89.0	92.1	80.2	-0.64	-0.62	0.43	-	123.9	126.0	151.8	135.0	162.6	30.8	29.3
Avg.	92.3	89.8	92.9	80.8	0.11	0.09	0.07	-	127.2	136.4	173.4	135.0	171.7	30.0	29.3
Std Dv	0.6	0.5	1.0	0.7	0.73	0.68	0.27	-	6.7	10.2	20.5	0.0	16.4	0.9	0.0
90% CI	0.6	0.5	1.0	0.7	0.69	0.65	0.25	-	6.4	9.7	19.6	0.0	15.7	0.9	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
K41	92.6	89.8	92.8	80.8	-0.64	-0.63	0.22	-	133.2	125.7	172.5	135.0	185.2	29.3	29.3
K42	92.6	89.9	93.0	80.4	1.27	1.16	-0.47	-	122.7	152.8	181.5	135.0	160.4	28.9	29.3
K43	91.1	88.4	91.4	78.6	-0.51	-0.51	0.12	-	96.1	127.4	128.1	135.0	135.8	28.9	29.3
K45	92.2	89.3	92.0	80.0	0.15	0.12	-0.03	-	117.2	136.4	153.4	135.0	151.8	29.4	29.3
K46	92.9	90.3	94.0	81.2	-0.57	-0.56	0.10	-	97.2	126.7	127.7	135.0	136.1	28.6	29.3
Avg.	92.3	89.5	92.6	80.2	-0.06	-0.08	-0.01	-	113.3	133.8	152.6	135.0	153.9	29.0	29.3
Std Dv	0.7	0.7	1.0	1.0	0.81	0.76	0.27	-	16.2	11.4	24.8	0.0	20.5	0.3	0.0
90% CI	0.7	0.7	1.0	1.0	0.77	0.72	0.26	-	15.5	10.9	23.6	0.0	19.5	0.3	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
KK52	88.9	85.9	88.3	75.4	-0.13	-0.15	-0.01	-	97.7	132.3	133.5	135.0	136.2	28.8	29.3
KK53	92.1	89.5	93.2	80.4	-1.02	-1.00	0.10	-	89.9	120.5	120.5	135.0	135.0	27.5	29.3
KK54	93.1	90.5	92.9	81.1	-0.50	-0.50	0.19	-	124.7	127.4	155.0	135.0	164.3	29.3	29.3
KK55	92.4	89.7	94.3	81.5	-0.02	-0.05	0.19	-	110.5	133.8	142.8	135.0	144.1	30.4	29.3
KK56	90.9	88.3	90.2	78.0	-0.18	-0.21	0.10	-	136.4	131.4	190.4	135.0	195.6	29.4	29.3
KK57	91.9	89.4	94.2	81.4	-0.15	-0.17	-0.24	-	121.3	132.1	154.6	135.0	158.0	27.3	29.3
Avg.	91.6	88.9	92.2	79.6	-0.33	-0.35	0.05	-	113.4	129.6	149.5	135.0	155.6	28.8	29.3
Std Dv	1.5	1.6	2.4	2.4	0.37	0.35	0.16	-	17.5	5.0	24.0	0.0	22.9	1.2	0.0
90% CI	1.2	1.3	2.0	2.0	0.31	0.29	0.13	-	14.4	4.1	19.7	0.0	18.8	1.0	0.0

Table C.21

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/26/85

CORRECTION DATA

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AA2	86.4	83.2	87.9	74.7	-1.17	-1.12	0.16	0.41	101.6	190.8	194.8	212.1	216.6	57.6	60.2
AA3	87.2	83.8	88.4	74.3	-0.97	-1.00	0.26	0.52	122.9	194.8	232.1	212.1	252.7	59.9	60.2
AA5	87.3	83.7	89.6	74.5	-0.65	-0.68	-0.05	0.52	117.6	200.2	226.0	212.1	239.4	56.9	60.2
AA6	86.4	83.2	88.2	75.0	-0.67	-0.70	0.11	0.46	128.2	200.0	254.4	212.1	269.8	59.1	60.2
AA7	87.2	83.8	88.8	74.7	-0.12	-0.18	-0.08	0.52	104.8	210.4	217.6	212.1	219.4	58.7	60.2
AA8	86.8	83.5	88.4	74.6	-0.77	-0.76	0.19	0.46	101.4	197.6	201.6	212.1	216.4	59.6	60.2
Avg.	86.9	83.5	88.5	74.6	-0.72	-0.74	0.10	0.48	112.8	199.0	221.1	212.1	235.7	58.6	60.2
Std Dv	0.4	0.3	0.6	0.2	0.36	0.33	0.14	0.05	11.7	6.6	21.6	0.0	22.2	1.1	0.0
90% CI	0.3	0.2	0.5	0.2	0.29	0.27	0.11	0.04	9.6	5.4	17.8	0.0	18.3	0.9	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AZ27	87.8	84.0	90.1	75.5	-0.34	-0.36	0.02	1.08	122.9	204.6	243.8	212.1	252.8	58.8	60.2
AZ28	86.4	83.1	86.8	74.1	-0.27	-0.26	0.08	0.96	120.3	206.4	239.2	212.1	245.7	60.1	60.2
AZ29	87.5	83.4	89.4	74.4	-0.26	-0.27	-0.01	1.14	105.7	206.0	214.0	212.1	220.4	58.7	60.2
AZ30	86.0	82.5	87.8	74.2	0.06	0.03	-0.15	1.01	101.2	212.3	216.4	212.1	216.2	58.2	60.2
Avg.	86.9	83.2	88.5	74.6	-0.20	-0.21	-0.02	1.05	112.5	207.3	228.3	212.1	233.8	59.0	60.2
Std Dv	0.9	0.6	1.5	0.6	0.18	0.17	0.10	0.08	10.7	3.4	15.3	0.0	18.2	0.8	0.0
90% CI	1.0	0.7	1.8	0.7	0.21	0.20	0.11	0.09	12.6	4.0	18.0	0.0	21.4	0.9	0.0

Table C.20

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AA2	88.2	84.9	90.9	77.4	-0.93	-0.93	0.12	0.23	91.3	136.9	136.9	150.0	150.0	57.7	60.2
AA3	87.5	84.4	89.3	76.2	-1.35	-1.30	0.32	0.26	135.7	132.1	188.9	150.0	214.6	58.9	60.2
AA5	89.0	86.0	89.9	76.9	-0.86	-0.84	1.05	0.26	123.0	138.2	164.8	150.0	178.9	72.0	60.2
AA6	87.5	84.3	90.1	77.0	-0.73	-0.72	0.11	0.26	136.0	140.2	201.8	150.0	215.8	58.6	60.2
AA7	88.0	85.1	90.5	76.6	-0.78	-0.77	0.14	0.26	115.9	139.0	154.4	150.0	166.7	58.7	60.2
AA8	87.4	84.6	89.7	76.8	-1.74	-1.68	0.52	0.26	124.9	126.5	154.2	150.0	182.9	59.7	60.2
Avg.	87.9	84.9	90.1	76.8	-1.06	-1.04	0.38	0.25	121.1	135.5	166.8	150.0	184.8	60.9	60.2
Std Dv	0.6	0.6	0.6	0.4	0.40	0.38	0.37	0.01	16.5	5.2	24.2	0.0	26.2	5.5	0.0
90% CI	0.5	0.5	0.5	0.3	0.33	0.31	0.30	0.01	13.6	4.3	19.9	0.0	21.5	4.5	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AZ27	87.7	84.4	90.1	76.6	0.15	0.11	-0.10	0.54	133.6	151.5	209.2	150.0	207.1	59.3	60.2
AZ28	87.8	84.5	90.6	77.1	0.02	-0.01	-0.02	0.54	127.4	149.7	188.5	150.0	188.9	59.8	60.2
AZ29	87.6	84.3	90.4	76.6	0.01	-0.02	-0.08	0.57	131.2	149.4	198.7	150.0	199.5	58.9	60.2
AZ30	87.1	83.7	90.1	76.6	0.22	0.19	-0.18	0.57	121.3	152.8	178.8	150.0	175.5	58.5	60.2
Avg.	87.6	84.2	90.3	76.7	0.10	0.07	-0.09	0.55	128.4	150.9	193.8	150.0	192.8	59.1	60.2
Std Dv	0.3	0.3	0.2	0.3	0.10	0.10	0.07	0.02	5.4	1.6	13.1	0.0	13.7	0.6	0.0
90% CI	0.4	0.4	0.3	0.3	0.12	0.12	0.08	0.02	6.3	1.9	15.4	0.0	16.1	0.7	0.0

Table C.19

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 4 CENTERLINE - 150 M. WEST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
M47	92.1	89.2	92.9	80.2	-1.75	-1.69	2.30	-	108.5	110.0	116.0	132.8	140.0	43.3	29.3
M48	-	87.5	90.4	77.2	1.64	1.49	-	-	106.6	155.6	162.4	132.8	138.6	43.3	29.3
M49	88.4	85.4	87.6	74.7	-0.61	-0.61	0.65	-	126.8	123.9	154.7	132.8	165.8	32.3	29.3
M50	88.6	85.5	88.2	74.8	2.09	1.89	-0.11	-	127.5	161.7	203.7	132.8	167.4	33.1	29.3
M51	88.3	85.3	87.2	73.9	-0.44	-0.44	0.47	-	89.8	126.2	126.2	132.8	132.8	31.4	29.3
Avg.	89.4	86.6	89.3	76.2	0.19	0.13	0.83	-	111.8	135.5	152.6	132.8	148.9	36.7	29.3
Std Dv	1.8	1.7	2.4	2.6	1.62	1.51	1.03	-	15.8	22.1	34.5	0.0	16.4	6.0	0.0
90% CI	2.1	1.7	2.3	2.5	1.55	1.44	1.22	-	15.0	21.1	32.9	0.0	15.6	5.8	0.0
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
MM58	90.4	87.0	90.3	76.8	0.53	0.47	1.24	-	127.4	138.8	174.6	132.8	167.1	40.3	29.3
MM59	88.6	85.7	88.4	75.1	-0.23	-0.25	0.10	-	98.9	128.7	130.3	132.8	134.4	29.3	29.3
MM60	88.9	85.8	88.6	75.5	0.43	0.37	-0.15	-	96.5	137.6	138.5	132.8	133.6	29.1	29.3
MM61	89.4	86.3	88.8	76.1	0.68	0.60	0.75	-	126.8	140.8	175.7	132.8	165.8	36.4	29.3
MM62	-	86.3	88.2	75.1	2.14	1.98	-	-	93.9	163.2	163.6	132.8	133.1	31.7	29.3
Avg.	89.3	86.2	88.9	75.7	0.71	0.63	0.48	-	108.7	141.8	156.5	132.8	146.8	33.4	29.3
Std Dv	0.8	0.5	0.8	0.7	0.87	0.82	0.63	-	16.9	12.8	21.0	0.0	17.9	4.9	0.0
90% CI	0.9	0.5	0.8	0.7	0.83	0.78	0.74	-	16.1	12.2	20.0	0.0	17.1	4.6	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BB11	88.2	84.9	89.0	75.2	-1.79	-1.68	0.35	-	106.6	162.8	169.9	190.4	198.6	28.3	29.3
BB13	88.4	84.9	88.8	75.0	-1.38	-1.29	-0.02	-	106.5	169.5	176.7	190.4	198.5	26.7	29.3
BB15	87.7	84.1	87.7	73.0	-0.46	-0.50	0.44	-	103.9	181.5	186.9	190.4	196.1	31.3	29.3
BB17	87.1	83.9	87.4	73.1	-1.83	-1.83	0.71	-	111.3	159.1	170.8	190.4	204.3	30.2	29.3
BB19	87.0	83.6	87.1	72.8	-0.76	-0.77	0.14	-	103.2	176.4	181.2	190.4	195.5	28.6	29.3
BB23	87.9	84.7	89.6	75.0	-0.04	-0.07	-0.08	-	99.4	189.0	191.5	190.4	193.0	28.6	29.3
BB25	86.4	82.9	87.2	72.8	-0.14	-0.16	-0.55	-	124.5	187.3	227.3	190.4	231.0	25.5	29.3
Avg.	87.5	84.1	88.1	73.8	-0.91	-0.90	0.14	-	107.9	175.1	186.3	190.4	202.4	28.5	29.3
Std Dv	0.8	0.8	1.0	1.2	0.75	0.71	0.41	-	8.2	11.7	19.7	0.0	13.1	1.9	0.0
90% CI	0.6	0.6	0.7	0.8	0.55	0.52	0.30	-	6.0	8.6	14.5	0.0	9.6	1.4	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BZ32	84.8	81.8	85.5	71.1	-0.96	-0.90	-0.10	-	92.6	173.6	173.7	190.8	191.0	26.7	29.3
BZ34	85.0	81.7	86.1	71.7	-1.20	-1.15	-0.13	-	94.3	169.2	169.7	190.8	191.3	26.0	29.3
BZ36	85.2	81.8	85.7	71.1	-0.89	-0.85	-0.22	-	97.7	174.6	176.1	190.8	192.5	26.1	29.3
BZ38	85.2	81.7	86.0	70.6	-1.71	-1.67	0.34	-	94.3	160.4	160.8	190.8	191.3	27.8	29.3
BZ40	84.9	81.5	85.9	70.8	-0.61	-0.59	0.08	-	92.0	179.0	179.1	190.8	190.9	28.4	29.3
Avg.	85.0	81.7	85.8	71.1	-1.07	-1.03	-0.01	-	94.2	171.3	171.9	190.8	191.4	27.0	29.3
Std Dv	0.2	0.1	0.2	0.4	0.41	0.41	0.22	-	2.2	7.1	7.1	0.0	0.6	1.1	0.0
90% CI	0.2	0.1	0.2	0.4	0.39	0.39	0.21	-	2.1	6.7	6.8	0.0	0.6	1.0	0.0

Table C.18

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/26/85

CORRECTION DATA

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
M47											NO TRACKING DATA				
M48	85.2	81.9	83.2	69.7	-0.01	-0.05	1.48	-	96.3	189.5	190.7	191.7	192.9	40.8	29.3
M49	83.3	80.2	82.0	69.1	-1.11	-1.06	-0.01	-	89.9	171.2	171.2	191.7	191.7	26.9	29.3
M50	84.4	81.3	82.6	69.4	0.53	0.39	-0.21	-	102.1	197.2	201.7	191.7	196.1	28.6	29.3
M51	84.3	81.2	83.2	70.0	-0.67	-0.67	0.04	-	94.0	177.8	178.2	191.7	192.1	28.0	29.3
Avg.	84.3	81.1	82.8	69.5	-0.31	-0.35	0.32	-	95.6	183.9	185.5	191.7	193.2	31.1	29.3
Std Dv	0.8	0.7	0.6	0.4	0.72	0.64	0.78	-	5.1	11.6	13.5	0.0	2.0	6.6	0.0
90% CI	0.9	0.8	0.7	0.5	0.85	0.76	0.91	-	6.0	13.7	15.9	0.0	2.3	7.7	0.0
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
NM58	-	81.5	82.2	69.4	-0.80	-0.78	-	-	109.2	175.5	185.9	191.7	203.0	36.0	29.3
NM59	84.8	81.4	83.2	69.8	0.06	-0.03	-0.79	-	118.4	188.8	214.6	191.7	217.8	24.2	29.3
NM60	84.2	81.1	81.9	68.8	-1.04	-1.01	-0.28	-	100.6	171.7	174.7	191.7	195.0	25.3	29.3
NM61	-	80.1	82.2	69.2	-0.48	-0.50	-	-	95.0	180.3	181.0	191.7	192.4	28.7	29.3
NM62											NO TRACKING DATA				
Avg.	84.5	81.0	82.4	69.3	-0.56	-0.58	-0.53	-	105.8	179.1	189.0	191.7	202.1	28.5	29.3
Std Dv	0.4	0.7	0.6	0.4	0.48	0.42	0.36	-	10.2	7.4	17.6	0.0	11.4	5.3	0.0
90% CI	2.0	0.8	0.7	0.5	0.56	0.50	1.61	-	12.0	8.7	20.7	0.0	13.5	6.3	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BB11	86.6	82.9	88.2	73.0	-1.34	-1.31	0.00	-	99.7	187.0	189.8	212.8	215.9	26.6	29.3
BB13	86.4	82.8	89.0	73.2	-0.74	-0.74	-0.23	-	103.7	198.6	204.4	212.8	219.0	26.4	29.3
BB15	87.0	83.3	87.8	72.9	-0.18	-0.18	-0.27	-	105.7	209.1	217.3	212.8	221.0	27.2	29.3
BB17	86.4	82.5	87.8	71.9	-0.89	-0.84	-0.45	-	105.4	195.3	202.5	212.8	220.7	24.8	29.3
BB19	85.7	81.8	88.5	72.8	-0.28	-0.29	-1.54	-	107.5	206.6	216.6	212.8	223.0	20.1	29.3
BB23	86.5	82.9	86.9	72.2	-0.50	-0.48	0.02	-	97.0	202.5	204.0	212.8	214.3	28.4	29.3
BB25	87.0	83.3	88.8	73.2	0.06	0.02	0.21	-	105.3	213.1	220.9	212.8	220.6	30.8	29.3
Avg.	86.5	82.8	88.2	72.7	-0.55	-0.55	-0.32	-	103.5	201.7	207.9	212.8	219.2	26.3	29.3
Std Dv	0.5	0.5	0.7	0.5	0.48	0.45	0.58	-	3.7	8.9	10.9	0.0	3.1	3.3	0.0
90% CI	0.3	0.4	0.5	0.4	0.35	0.33	0.43	-	2.8	6.5	8.0	0.0	2.3	2.4	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BZ32	86.0	82.4	87.6	72.1	-0.39	-0.37	-0.42	-	93.5	204.4	204.8	212.8	213.1	25.8	29.3
BZ34	86.5	82.8	87.9	72.3	-0.48	-0.46	-0.48	-	97.8	202.3	204.2	212.8	214.8	25.3	29.3
BZ36	85.9	82.6	87.2	71.5	-0.22	-0.20	-0.42	-	93.7	207.6	208.1	212.8	213.2	26.1	29.3
BZ38	85.5	82.1	86.8	71.2	-0.72	-0.68	-0.15	-	92.9	197.8	198.1	212.8	213.0	26.9	29.3
BZ40	85.7	82.2	86.7	71.4	-0.43	-0.40	-0.08	-	92.0	203.4	203.6	212.8	212.9	27.8	29.3
Avg.	85.9	82.4	87.2	71.7	-0.45	-0.42	-0.31	-	94.0	203.1	203.7	212.8	213.4	26.4	29.3
Std Dv	0.4	0.3	0.5	0.5	0.18	0.17	0.18	-	2.3	3.6	3.6	0.0	0.8	1.0	0.0
90% CI	0.3	0.3	0.5	0.4	0.17	0.17	0.17	-	2.1	3.4	3.4	0.0	0.7	0.9	0.0

Table C.17

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/26/85

CORRECTION DATA

SITE: 3 SIDELINE - 150 M. NORTH AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CC10	85.7	82.2	86.9	71.6	-0.80	-0.81	0.13	-	98.1	177.1	178.9	191.7	193.6	28.5	29.3
CC12	86.1	82.3	86.5	71.8	-0.37	-0.40	0.24	-	98.2	185.0	186.9	191.7	193.7	30.1	29.3
CC14										NO TRACKING DATA					
CC16	85.0	81.8	83.7	70.0	-0.17	-0.17	0.41	-	112.9	188.7	204.9	191.7	208.1	31.8	29.3
CC18	85.8	82.5	85.5	70.8	-0.80	-0.75	0.10	-	109.9	177.7	189.0	191.7	203.9	28.3	29.3
CC20	87.0	83.2	86.2	71.3	-0.11	-0.11	-0.02	-	95.9	189.7	190.7	191.7	192.7	29.0	29.3
CC22	88.7	85.0	88.4	74.2	-0.33	-0.32	0.31	-	109.1	185.3	196.1	191.7	202.9	30.7	29.3
CC24	86.4	82.6	86.8	71.6	-0.52	-0.50	0.25	-	98.0	181.9	183.7	191.7	193.6	29.8	29.3
Avg.	86.4	82.8	86.3	71.6	-0.44	-0.44	0.20	-	103.2	183.6	190.0	191.7	198.3	29.8	29.3
Std Dv	1.2	1.1	1.4	1.3	0.28	0.27	0.14	-	7.1	5.0	8.5	0.0	6.4	1.3	0.0
90% CI	0.9	0.8	1.1	1.0	0.20	0.20	0.11	-	5.2	3.7	6.2	0.0	4.7	0.9	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CZ31	87.6	84.2	86.9	72.5	-0.22	-0.21	0.24	-	107.7	187.2	196.5	191.7	201.2	30.4	29.3
CZ33	87.0	83.4	87.6	72.3	0.23	0.21	0.02	-	97.3	195.5	197.1	191.7	193.2	29.9	29.3
CZ35	86.4	83.0	85.2	72.2	-0.25	-0.24	-0.04	-	118.2	186.3	211.3	191.7	217.4	28.4	29.3
CZ37	85.9	82.6	84.3	70.4	0.02	0.02	0.20	-	95.4	191.4	192.2	191.7	192.5	30.7	29.3
CZ39	87.8	84.7	87.8	73.4	-0.38	-0.37	0.19	-	100.3	183.9	186.9	191.7	194.9	29.7	29.3
Avg.	86.9	83.6	86.3	72.2	-0.12	-0.12	0.12	-	103.8	188.9	196.8	191.7	199.9	29.8	29.3
Std Dv	0.8	0.9	1.5	1.1	0.24	0.23	0.12	-	9.3	4.6	9.1	0.0	10.4	0.9	0.0
90% CI	0.8	0.8	1.5	1.0	0.23	0.22	0.12	-	8.9	4.4	8.7	0.0	9.9	0.8	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
K41	86.5	83.0	85.4	71.5	-0.46	-0.46	0.05	-	110.7	181.9	194.5	191.7	204.9	28.6	29.3
K42	86.7	82.7	86.8	71.4	0.43	0.37	-0.12	-	97.0	197.9	199.4	191.7	193.1	29.2	29.3
K43	87.0	83.6	86.6	72.4	-0.20	-0.22	-0.04	-	94.7	186.6	187.2	191.7	192.3	28.4	29.3
K45	87.1	83.6	87.2	73.2	-0.22	-0.23	0.04	-	98.6	186.3	188.4	191.7	193.9	29.0	29.3
K46	87.9	84.3	86.4	72.5	-0.24	-0.25	0.01	-	107.0	186.0	194.5	191.7	200.4	28.8	29.3
Avg.	87.0	83.4	86.5	72.2	-0.14	-0.16	-0.01	-	101.6	187.8	192.8	191.7	196.9	28.8	29.3
Std Dv	0.5	0.6	0.6	0.7	0.33	0.31	0.07	-	6.9	6.0	5.0	0.0	5.5	0.3	0.0
90% CI	0.5	0.6	0.6	0.7	0.32	0.30	0.07	-	6.6	5.7	4.8	0.0	5.3	0.3	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
KK52	84.9	81.6	83.5	70.2	-0.19	-0.21	0.04	-	110.1	186.0	198.1	191.7	204.1	28.9	29.3
KK53	86.5	83.0	86.1	73.1	-0.47	-0.47	-0.24	-	105.0	181.2	187.6	191.7	198.4	26.6	29.3
KK54	86.9	83.2	86.7	72.5	-0.15	-0.18	-0.08	-	111.8	186.7	201.0	191.7	206.4	28.2	29.3
KK55	86.0	83.1	83.9	70.7	0.12	0.02	-0.16	-	106.3	189.9	197.9	191.7	199.7	28.0	29.3
KK56	84.7	81.7	82.6	69.6	-0.18	-0.21	-0.08	-	122.9	185.6	221.1	191.7	228.3	28.1	29.3
KK57	87.2	83.6	88.4	74.1	0.07	0.03	-0.47	-	93.3	191.2	191.5	191.7	192.0	26.3	29.3
Avg.	86.0	82.7	85.2	71.7	-0.13	-0.17	-0.16	-	108.2	186.8	199.5	191.7	204.8	27.7	29.3
Std Dv	1.0	0.8	2.2	1.8	0.21	0.18	0.18	-	9.7	3.5	11.7	0.0	12.5	1.0	0.0
90% CI	0.9	0.7	1.8	1.5	0.17	0.15	0.14	-	8.0	2.9	9.6	0.0	10.3	0.8	0.0

Table C.16

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/25/85

CORRECTION DATA

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AA2	87.3	84.1	88.5	74.8	-0.21	-0.19	-0.17	0.46	112.8	210.6	228.5	212.1	230.2	57.6	60.2
AA3	86.6	83.7	87.7	74.8	-0.96	-0.92	0.20	0.52	100.9	194.8	198.3	212.1	216.0	59.2	60.2
AA5	85.6	82.7	87.4	74.0	-0.67	-0.66	-0.01	0.46	100.2	200.2	203.5	212.1	215.5	57.6	60.2
AA6	87.1	83.8	89.4	75.4	-0.81	-0.74	0.11	0.52	125.4	200.0	245.4	212.1	260.2	59.1	60.2
AA7	85.2	82.4	86.9	74.0	-0.90	-0.89	0.15	0.46	90.1	195.4	195.4	212.1	212.1	58.6	60.2
AA8	87.7	84.3	89.4	75.4	-0.81	-0.84	0.19	0.52	109.3	197.0	208.8	212.1	224.8	59.5	60.2
Avg.	86.6	83.5	88.2	74.7	-0.73	-0.71	0.08	0.49	106.4	199.7	213.3	212.1	226.5	58.6	60.2
Std Dv	1.0	0.7	1.1	0.6	0.27	0.27	0.14	0.03	12.2	5.8	19.6	0.0	17.8	0.8	0.0
90% CI	0.8	0.6	0.9	0.5	0.22	0.22	0.12	0.03	10.1	4.8	16.1	0.0	14.7	0.7	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AZ27	86.7	83.7	88.1	75.7	-0.36	-0.35	-0.04	0.96	111.7	204.6	220.2	212.1	228.3	58.1	60.2
AZ28	87.8	84.4	89.6	75.4	0.08	0.05	-0.02	1.08	105.4	212.8	220.7	212.1	220.0	60.0	60.2
AZ29	86.1	83.0	87.5	74.8	-0.28	-0.28	-0.03	1.01	122.6	206.0	244.4	212.1	251.7	58.4	60.2
AZ30	87.7	84.3	89.6	75.8	0.02	0.00	-0.15	1.14	106.0	211.7	220.2	212.1	220.7	58.1	60.2
Avg.	87.1	83.9	88.7	75.4	-0.13	-0.14	-0.06	1.05	111.4	208.8	226.4	212.1	230.2	58.6	60.2
Std Dv	0.8	0.6	1.1	0.4	0.22	0.20	0.06	0.08	8.0	4.1	12.0	0.0	14.9	0.9	0.0
90% CI	0.9	0.8	1.2	0.5	0.26	0.23	0.07	0.09	9.4	4.8	14.2	0.0	17.5	1.1	0.0

Table C.15

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
7/25/85

SITE: 2 | SIDELINE - 150 M. SOUTH | AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
M47										NO TRACKING DATA					
M48	89.7	86.3	90.9	77.6	1.24	1.10	1.01	-	94.4	214.1	214.7	191.7	192.2	40.2	29.3
M49	88.4	85.3	92.0	79.1	-0.42	-0.43	-0.16	-	95.9	182.3	183.2	191.7	192.7	27.2	29.3
M50	88.3	85.3	91.6	78.4	0.89	0.77	-0.60	-	98.2	207.1	209.2	191.7	193.6	27.1	29.3
M51	88.3	85.0	89.8	76.6	-0.21	-0.24	0.06	-	104.6	185.8	192.0	191.7	198.0	29.1	29.3
Avg.	88.7	85.5	91.1	77.9	0.37	0.30	0.08	-	98.2	197.3	199.8	191.7	194.2	30.9	29.3
Std Dv	0.7	0.6	1.0	1.1	0.81	0.75	0.68	-	4.5	15.6	14.7	0.0	2.7	6.3	0.0
90% CI	0.8	0.7	1.1	1.3	0.96	0.88	0.80	-	5.3	18.4	17.3	0.0	3.1	7.4	0.0
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
MM58	89.6	86.0	91.4	77.1	0.54	0.45	0.53	-	93.5	199.8	200.2	191.7	192.0	34.2	29.3
MM59	89.2	85.9	89.9	76.6	-0.40	-0.43	0.10	-	128.1	181.5	230.8	191.1	243.0	28.9	29.3
MM60	90.3	87.0	92.8	78.9	0.63	0.53	-0.92	-	91.3	201.5	201.5	191.7	191.7	24.6	29.3
MM61	89.3	86.2	92.0	78.2	0.70	0.60	-0.26	-	100.6	202.7	206.3	191.7	195.0	28.8	29.3
MM62	88.5	85.4	89.9	77.0	1.44	1.28	-0.41	-	91.6	217.5	217.6	191.7	191.7	29.3	29.3
Avg.	89.3	86.1	91.2	77.5	0.58	0.49	-0.19	-	101.0	200.6	211.3	191.6	202.7	29.2	29.3
Std Dv	0.7	0.6	1.3	0.9	0.66	0.61	0.55	-	15.6	12.8	12.9	0.2	22.6	3.4	0.0
90% CI	0.6	0.6	1.2	0.9	0.62	0.58	0.52	-	14.9	12.2	12.3	0.2	21.5	3.2	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BB11	87.8	84.0	88.2	73.5	-0.17	-0.22	-0.17	-	107.5	209.7	219.9	212.8	223.1	27.9	29.3
BB13	88.3	84.4	89.6	74.5	-0.73	-0.75	-0.32	-	101.5	198.6	202.7	212.8	217.1	25.9	29.3
BB15	86.7	82.9	88.8	73.2	-0.16	-0.19	-0.16	-	102.0	209.1	213.8	212.8	217.5	27.9	29.3
BB17	86.4	82.4	87.2	72.0	-0.87	-0.85	-0.53	-	100.9	195.3	198.8	212.8	216.6	24.3	29.3
BB19	86.4	82.4	88.9	73.2	-0.29	-0.30	-1.01	-	97.1	206.6	208.3	212.8	214.4	22.7	29.3
BB23	87.6	83.5	89.3	73.6	0.14	0.11	-0.27	-	99.5	215.1	218.1	212.8	215.7	27.8	29.3
BB25	87.8	84.0	88.8	73.7	0.04	0.02	0.09	-	100.7	213.1	216.8	212.8	216.5	29.9	29.3
Avg.	87.3	83.4	88.7	73.4	-0.29	-0.31	-0.34	-	101.3	206.8	211.2	212.8	217.3	26.6	29.3
Std Dv	0.8	0.8	0.8	0.8	0.38	0.36	0.35	-	3.2	7.3	8.1	0.0	2.8	2.5	0.0
90% CI	0.6	0.6	0.6	0.6	0.28	0.27	0.26	-	2.3	5.4	6.0	0.0	2.0	1.8	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BZ32	87.4	83.8	88.1	73.7	-0.47	-0.45	-0.38	-	92.4	202.7	202.9	212.8	212.9	25.9	29.3
BZ34	87.5	83.8	88.9	73.6	-0.88	-0.86	-0.34	-	91.6	194.3	194.4	212.8	212.8	25.3	29.3
BZ36	87.7	83.9	89.3	73.8	-0.63	-0.63	-0.28	-	93.9	198.9	199.3	212.8	213.2	26.1	29.3
BZ38	86.7	83.1	88.4	73.0	-0.79	-0.78	-0.13	-	90.1	195.9	195.9	212.8	212.8	26.7	29.3
BZ40	87.6	83.8	88.6	72.9	-0.43	-0.44	-0.07	-	93.8	202.9	203.3	212.8	213.2	27.8	29.3
Avg.	87.4	83.7	88.7	73.4	-0.64	-0.63	-0.24	-	92.3	198.9	199.2	212.8	213.0	26.4	29.3
Std Dv	0.4	0.3	0.5	0.4	0.20	0.19	0.13	-	1.6	3.9	4.0	0.0	0.2	1.0	0.0
90% CI	0.4	0.3	0.4	0.4	0.19	0.18	0.13	-	1.5	3.7	3.8	0.0	0.2	0.9	0.0

Table C.14

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/25/85

CORRECTION DATA

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CC10	92.1	89.4	91.3	79.2	-0.13	-0.13	0.18	-	143.2	190.9	318.8	191.7	320.1	30.5	29.3
CC12	90.9	88.2	90.5	77.4	0.17	0.15	0.03	-	93.4	195.7	196.0	191.7	192.0	30.0	29.3
CC14	88.5	86.1	89.0	76.6	-0.20	-0.19	0.15	-	107.5	188.8	198.0	191.7	201.0	30.0	29.3
CC16	90.4	88.0	91.6	78.9	-0.15	-0.15	0.46	-	107.2	188.7	197.6	191.7	200.7	32.2	29.3
CC18	90.8	87.9	91.3	78.3	-0.75	-0.72	0.28	-	113.9	177.7	194.3	191.7	209.6	29.5	29.3
CC20	91.8	89.6	91.7	78.6	-0.09	-0.10	0.29	-	118.7	189.7	216.2	191.7	218.5	31.1	29.3
CC22	90.1	87.2	92.1	78.7	-0.39	-0.38	0.41	-	89.9	184.0	184.0	191.7	191.7	31.2	29.3
CC24	91.5	88.9	91.1	77.2	0.06	0.05	-0.14	-	102.2	192.6	197.1	191.7	196.1	28.5	29.3
Avg.	90.8	88.2	91.1	78.1	-0.18	-0.18	0.21	-	109.5	188.5	212.8	191.7	216.2	30.4	29.3
Std Dv	1.1	1.1	1.0	0.9	0.28	0.27	0.20	-	16.7	5.5	43.8	0.0	42.9	1.1	0.0
90% CI	0.8	0.8	0.6	0.6	0.19	0.18	0.13	-	11.2	3.7	29.3	0.0	28.8	0.8	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CZ31	90.4	87.6	90.4	76.8	-0.20	-0.21	-0.20	-	119.1	187.2	214.3	191.7	219.4	27.5	29.3
CZ33	90.8	87.9	89.9	77.1	0.25	0.21	0.04	-	119.4	195.5	224.5	191.7	220.1	30.0	29.3
CZ35	91.7	89.1	92.1	78.5	-0.15	-0.16	-0.15	-	104.0	188.0	193.7	191.7	197.5	27.9	29.3
CZ37	90.9	88.0	91.2	78.6	0.58	0.52	0.07	-	108.1	202.2	212.7	191.7	201.7	31.0	29.3
CZ39	88.4	85.7	87.4	73.2	-0.38	-0.37	0.16	-	91.0	183.9	183.9	191.7	191.7	29.5	29.3
Avg.	90.4	87.7	90.2	76.8	0.02	-0.00	-0.02	-	108.3	191.4	205.8	191.7	206.1	29.2	29.3
Std Dv	1.2	1.3	1.8	2.2	0.39	0.36	0.15	-	11.8	7.4	16.5	0.0	13.0	1.5	0.0
90% CI	1.2	1.2	1.7	2.1	0.37	0.34	0.15	-	11.3	7.0	15.8	0.0	12.4	1.4	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
K41	91.8	88.7	92.8	78.8	-0.45	-0.46	0.05	-	109.6	181.9	193.2	191.7	203.5	28.6	29.3
K42	92.1	89.3	91.7	78.5	0.43	0.35	-0.14	-	126.8	197.9	247.3	191.7	239.5	29.1	29.3
K43	90.6	87.8	90.1	76.9	-0.20	-0.22	-0.04	-	105.4	186.6	193.5	191.7	198.8	28.5	29.3
K45	91.1	88.0	91.8	78.1	-0.23	-0.24	-0.02	-	100.9	186.3	189.7	191.7	195.2	28.6	29.3
K46	90.2	87.2	90.8	77.4	-0.23	-0.25	-0.29	-	107.6	186.0	195.1	191.7	201.1	26.8	29.3
Avg.	91.2	88.2	91.5	77.9	-0.14	-0.16	-0.09	-	110.1	187.8	203.8	191.7	207.6	28.3	29.3
Std Dv	0.8	0.8	1.0	0.8	0.33	0.30	0.13	-	9.9	6.0	24.4	0.0	18.1	0.9	0.0
90% CI	0.8	0.8	1.0	0.7	0.32	0.29	0.13	-	9.5	5.7	23.3	0.0	17.2	0.8	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts -- ICAO															
KK52	89.4	86.4	90.3	76.7	0.43	0.36	-0.20	-	105.1	197.7	204.8	191.7	198.5	28.6	29.3
KK53	90.6	87.4	90.7	77.0	-0.07	-0.10	-0.38	-	97.1	188.5	190.0	191.7	193.2	26.5	29.3
KK54	90.6	88.3	92.4	79.6	-0.16	-0.19	0.03	-	121.1	186.7	218.0	191.7	223.8	29.0	29.3
KK55	91.4	88.6	90.9	78.7	0.64	0.54	-0.44	-	92.7	201.6	201.8	191.7	191.9	27.5	29.3
KK56	90.5	87.5	91.0	77.2	-0.22	-0.25	-0.20	-	106.1	185.5	193.0	191.7	199.5	27.3	29.3
KK57	91.7	88.6	92.2	78.6	-0.03	-0.06	-0.44	-	99.7	189.4	192.2	191.7	194.4	26.2	29.3
Avg.	90.7	87.8	91.3	78.0	0.10	0.05	-0.27	-	103.6	191.6	200.0	191.7	200.2	27.5	29.3
Std Dv	0.8	0.9	0.8	1.2	0.35	0.32	0.18	-	9.9	6.5	10.6	0.0	11.9	1.1	0.0
90% CI	0.7	0.7	0.7	0.9	0.29	0.26	0.15	-	8.1	5.4	8.7	0.0	9.8	0.9	0.0

Table C.13

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/25/85

CORRECTION DATA

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AA2	87.6	84.3	90.1	76.3	-1.14	-1.11	0.17	0.23	121.1	134.2	156.7	150.0	175.1	57.6	60.2
AA3	88.2	84.9	90.2	76.2	-1.92	-1.85	0.60	0.26	131.4	124.3	165.8	150.0	200.1	60.0	60.2
AA5	87.0	84.0	89.2	76.0	-1.28	-1.24	0.14	0.26	131.2	132.7	176.4	150.0	199.4	56.7	60.2
AA6	87.4	84.2	90.1	77.2	-1.33	-1.28	0.35	0.26	136.1	132.4	190.8	150.0	216.2	59.5	60.2
AA7	87.4	84.0	90.4	76.3	-0.90	-0.89	0.18	0.26	118.6	137.3	156.3	150.0	170.8	58.7	60.2
AA8	87.1	83.7	89.6	76.2	-1.57	-1.54	0.45	0.26	127.6	128.6	162.4	150.0	189.4	59.4	60.2
Avg.	87.5	84.2	89.9	76.4	-1.36	-1.32	0.31	0.25	127.7	131.6	168.1	150.0	191.9	58.6	60.2
Std Dv	0.4	0.4	0.4	0.4	0.35	0.34	0.18	0.01	6.7	4.5	13.4	0.0	17.0	1.3	0.0
90% CI	0.4	0.3	0.4	0.3	0.29	0.28	0.15	0.01	5.5	3.7	11.0	0.0	14.0	1.0	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AZ27	87.7	84.1	90.0	76.2	-0.72	-0.71	0.12	0.54	128.2	139.1	177.0	150.0	190.9	58.5	60.2
AZ28	87.9	84.6	91.2	77.5	-0.18	-0.19	0.06	0.54	127.7	146.9	185.5	150.0	189.5	60.1	60.2
AZ29	87.7	84.3	91.3	77.1	-0.43	-0.42	0.04	0.57	116.7	143.3	160.3	150.0	167.9	58.7	60.2
AZ30	87.6	84.1	90.0	76.4	0.06	0.04	-0.17	0.57	120.7	150.4	174.8	150.0	174.4	58.0	60.2
Avg.	87.7	84.3	90.6	76.8	-0.32	-0.32	0.01	0.55	123.3	144.9	174.4	150.0	180.6	58.8	60.2
Std Dv	0.2	0.2	0.7	0.6	0.33	0.32	0.13	0.02	5.6	4.8	10.5	0.0	11.3	0.9	0.0
90% CI	0.2	0.3	0.8	0.7	0.39	0.38	0.15	0.02	6.6	5.7	12.3	0.0	13.3	1.0	0.0

Table C.12

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR.	SRR	GRND	REF
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
M47	92.6	89.4	95.3	82.0	-0.61	-0.61	0.13	-	136.3	109.5	158.5	117.4	169.9	28.7	29.3
M48	91.2	87.9	91.3	77.7	1.51	1.39	1.09	-	128.3	136.0	173.2	117.4	149.5	42.1	29.3
M49	87.3	84.3	88.6	74.9	-2.07	-1.98	0.37	-	95.6	94.2	94.7	117.4	117.9	27.1	29.3
M50	87.8	94.8	88.7	74.8	1.51	1.38	-0.69	-	96.7	136.1	137.0	117.4	118.2	27.9	29.3
M51	89.1	86.0	89.6	76.0	-1.17	-1.14	0.32	-	103.5	103.3	106.2	117.4	120.7	28.6	29.3
Avg.	89.6	86.5	90.7	77.1	-0.17	-0.19	0.24	-	112.1	115.8	133.9	117.4	135.3	30.9	29.3
Std Dv	2.2	2.2	2.8	3.0	1.62	1.52	0.64	-	18.9	19.2	33.4	0.0	23.5	6.3	0.0
90% CI	2.1	2.1	2.6	2.9	1.54	1.45	0.61	-	18.0	18.3	31.9	0.0	22.4	6.0	0.0
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
MM58	90.0	86.8	90.0	76.5	-0.21	-0.22	1.03	-	125.1	114.1	139.4	117.4	143.5	36.4	29.3
MM59	87.7	84.5	88.8	75.1	-0.64	-0.64	-0.19	-	98.7	109.1	110.3	117.4	118.7	26.6	29.3
MM60	89.1	86.0	90.3	76.4	-0.35	-0.36	-0.53	-	89.7	112.4	112.4	117.4	117.4	25.1	29.3
MM61	89.4	86.3	88.5	74.9	0.56	0.47	0.32	-	133.9	122.6	170.1	117.4	162.8	32.6	29.3
MM62	88.9	85.7	88.9	75.2	1.81	1.63	-0.46	-	102.1	139.5	142.7	117.4	120.0	30.0	29.3
Avg.	89.0	85.9	89.3	75.6	0.23	0.18	0.03	-	109.9	119.5	135.0	117.4	132.5	30.1	29.3
Std Dv	0.9	0.8	0.8	0.8	0.99	0.91	0.65	-	18.7	12.2	24.6	0.0	20.1	4.5	0.0
90% CI	0.8	0.8	0.8	0.7	0.94	0.87	0.62	-	17.8	11.7	23.5	0.0	19.1	4.3	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BB11	88.4	84.8	90.2	76.2	-1.41	-1.42	0.05	-	94.8	130.9	131.4	150.9	151.4	26.6	29.3
BB13	88.8	85.1	89.2	75.3	-1.90	-1.89	0.25	-	101.6	124.7	127.3	150.9	154.0	27.0	29.3
BB15	87.1	83.5	88.3	73.0	-0.71	-0.72	-0.03	-	102.1	140.0	143.2	150.9	154.3	27.5	29.3
BB17	87.0	83.7	88.3	73.9	-2.18	-2.15	-0.16	-	101.0	120.9	123.1	150.9	153.7	23.9	29.3
BB19	86.6	82.8	88.5	74.2	-0.93	-0.91	-0.75	-	97.3	137.1	138.2	150.9	152.1	22.9	29.3
BB23	88.5	85.1	90.3	75.1	-0.13	-0.15	-0.10	-	99.6	148.4	150.6	150.9	153.0	28.3	29.3
BB25	87.7	84.1	89.1	74.1	-0.35	-0.37	0.33	-	100.8	145.2	147.8	150.9	153.6	30.8	29.3
Avg.	87.7	84.1	89.1	74.5	-1.09	-1.09	-0.06	-	99.6	135.3	137.4	150.9	153.2	26.7	29.3
Std Dv	0.9	0.8	0.8	1.1	0.77	0.76	0.35	-	2.6	10.3	10.5	0.0	1.1	2.6	0.0
90% CI	0.6	0.6	0.6	0.8	0.57	0.56	0.26	-	1.9	7.6	7.7	0.0	0.8	1.9	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BZ32	86.2	82.8	87.6	73.5	-0.84	-0.82	-0.26	-	90.2	138.1	138.1	150.9	150.9	25.9	29.3
BZ34	86.3	82.9	87.2	73.5	-1.38	-1.35	-0.18	-	91.9	130.7	130.8	150.9	151.0	25.3	29.3
BZ36	86.7	83.3	87.9	73.3	-0.85	-0.83	-0.21	-	95.6	137.8	138.5	150.9	151.6	26.1	29.3
BZ38	86.3	82.9	88.0	72.4	-1.58	-1.54	0.15	-	90.1	128.0	128.0	150.9	150.9	26.8	29.3
BZ40	86.5	82.4	88.0	72.8	-0.87	[illegible]	0.07	-	91.4	137.6	137.6	150.9	150.9	27.8	29.3
Avg.	86.4	82.9	87.7	73.1	-1.10	-1.08	-0.09	-	91.8	134.4	134.6	150.9	151.1	26.4	29.3
Std Dv	0.2	0.3	0.4	0.5	0.35	0.34	0.18	-	2.2	4.8	4.9	0.0	0.3	1.0	0.0
90% CI	0.2	0.3	0.3	0.5	0.33	0.32	0.17	-	2.1	4.5	4.6	0.0	0.3	0.9	0.0

Table C.11

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
7/25/85

SITE: 1 CENTERLINE - CENTER AUG. 28,1984

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
CC10	92.9	90.2	94.8	81.6	-0.04	-0.06	-0.10	-	118.0	118.9	134.7	119.3	135.1	28.6	29.3
CC12	92.9	90.1	96.1	83.2	-0.13	-0.13	0.17	-	118.6	117.9	134.2	119.3	135.9	30.2	29.3
CC14	90.4	87.4	93.2	80.3	-0.78	-0.74	0.35	-	125.9	110.3	136.1	119.3	147.2	30.0	29.3
CC16	90.4	87.7	93.8	81.2	-0.53	-0.52	-0.70	-	122.8	112.8	134.2	119.3	142.0	23.9	29.3
CC18	93.4	91.1	94.8	82.3	-2.23	-2.12	0.76	-	127.9	94.5	119.8	119.3	151.3	29.3	29.3
CC20	92.9	90.1	94.3	81.7	-0.33	-0.33	0.33	-	123.0	115.2	137.4	119.3	142.4	30.8	29.3
CC22	93.5	90.9	94.2	82.3	-1.04	-1.00	0.69	-	124.5	106.9	129.8	119.3	144.8	31.7	29.3
CC24	93.2	90.5	95.1	82.2	0.32	0.28	-0.03	-	123.2	123.1	147.1	119.3	142.6	29.8	29.3
Avg.	92.4	89.7	94.5	81.9	-0.59	-0.58	0.18	-	123.0	112.4	134.2	119.3	142.7	29.3	29.3
Std Dv	1.3	1.4	0.9	0.9	0.79	0.74	0.47	-	3.4	8.9	7.6	0.0	5.4	2.4	0.0
90% CI	0.9	0.9	0.6	0.6	0.53	0.50	0.31	-	2.3	5.9	5.1	0.0	3.6	1.6	0.0

6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO

Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
CZ31	93.0	90.4	94.3	82.2	-0.66	-0.64	-0.07	-	124.3	111.1	134.6	119.3	144.5	27.4	29.3
CZ33	93.0	90.1	94.0	80.8	0.35	0.32	-0.10	-	102.8	123.5	126.7	119.3	122.4	29.4	29.3
CZ35	93.0	90.4	93.4	81.0	-0.84	-0.80	0.10	-	132.7	109.1	148.4	119.3	162.3	28.0	29.3
CZ37	92.6	89.7	94.9	82.0	0.69	0.64	0.02	-	114.6	127.9	140.7	119.3	131.3	31.0	29.3
CZ39	92.1	89.7	93.6	81.5	-1.17	-1.12	0.31	-	133.3	105.4	145.0	119.3	164.1	28.7	29.3
Avg.	92.7	90.1	94.0	81.5	-0.33	-0.32	0.05	-	121.6	115.4	139.1	119.3	144.9	28.9	29.3
Std Dv	0.4	0.4	0.6	0.6	0.80	0.76	0.16	-	12.9	9.8	8.6	0.0	18.5	1.4	0.0
90% CI	0.4	0.3	0.6	0.6	0.77	0.72	0.16	-	12.3	9.3	8.2	0.0	17.6	1.3	0.0

6 DEGREE APPROACH -- TARGET IAS 57kts.

Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
K41	93.1	90.1	94.2	81.2	-1.47	-1.44	0.40	-	109.4	101.6	107.7	119.3	126.5	28.5	29.3
K42	93.0	90.1	94.7	82.1	0.71	0.65	-0.24	-	112.6	127.9	138.5	119.3	129.3	29.2	29.3
K43	92.3	89.4	92.8	80.6	-0.43	-0.43	0.05	-	130.0	113.5	148.2	119.3	155.7	28.6	29.3
K45	93.3	90.7	93.7	81.9	-0.76	-0.74	0.13	-	97.3	109.7	110.6	119.3	120.3	28.4	29.3
K46	93.2	90.8	94.3	82.6	-0.66	-0.64	0.14	-	133.4	111.0	152.7	119.3	164.2	28.7	29.3
Avg.	93.0	90.2	93.9	81.7	-0.52	-0.52	0.10	-	116.5	112.8	131.6	119.3	139.2	28.7	29.3
Std Dv	0.4	0.6	0.8	0.8	0.79	0.76	0.23	-	15.0	9.6	21.1	0.0	19.5	0.3	0.0
90% CI	0.4	0.5	0.7	0.8	0.75	0.72	0.22	-	14.3	9.1	20.1	0.0	18.5	0.3	0.0

6 DEGREE APPROACH -- TARGET IAS 57kts.

Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
KK52	90.3	87.2	91.7	79.1	-0.90	-0.88	-0.07	-	97.3	108.0	108.9	119.3	120.3	26.7	29.3
KK53	93.4	90.7	95.2	82.6	-1.33	-1.30	0.06	-	92.6	103.0	103.1	119.3	119.5	26.6	29.3
KK54	92.4	89.7	94.2	81.9	-0.69	-0.67	0.14	-	132.6	110.4	150.1	119.3	162.2	28.6	29.3
KK55	90.6	87.8	90.9	77.9	-0.12	-0.14	-0.20	-	92.8	117.1	117.2	119.3	119.5	27.6	29.3
KK56	89.9	87.0	90.0	77.6	-0.77	-0.75	-0.06	-	99.1	109.5	110.9	119.3	120.9	27.1	29.3
KK57	92.4	89.8	93.6	81.1	-0.78	-0.76	-0.12	-	127.6	109.4	138.1	119.3	150.6	26.7	29.3
Avg.	91.5	88.7	92.6	80.0	-0.76	-0.75	-0.04	-	107.0	109.6	121.4	119.3	132.2	27.2	29.3
Std Dv	1.4	1.6	2.0	2.1	0.39	0.37	0.12	-	18.2	4.5	18.6	0.0	19.2	0.7	0.0
90% CI	1.2	1.3	1.7	1.8	0.32	0.31	0.10	-	14.9	3.7	15.3	0.0	15.8	0.6	0.0

Table C.10

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 5 — CENTERLINE - 150 M. EAST — AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 130kts. -- Vh															
H17	89.2	85.3	91.7	78.0	0.19	-0.06	-0.37	0.73	126.2	149.1	184.8	150.0	185.9	61.1	66.9
H18	88.3	84.7	91.1	77.8	-1.39	-1.53	0.34	0.59	126.6	127.9	159.3	150.0	186.8	64.1	66.9
H19	88.1	84.7	90.8	77.3	-0.88	-1.11	0.22	0.47	129.8	133.4	173.6	150.0	195.1	64.5	66.9
H20	88.1	84.7	91.6	78.0	-1.14	-1.33	0.32	0.62	126.3	130.1	161.5	150.0	186.1	64.8	66.9
H21	88.6	85.0	91.8	77.9	-0.31	-0.57	0.00	0.65	130.9	141.1	186.6	150.0	198.4	63.9	66.9
Avg.	88.5	84.9	91.4	77.8	-0.71	-0.92	0.10	0.61	128.0	136.3	173.1	150.0	190.5	63.7	66.9
Std Dv	0.4	0.3	0.4	0.3	0.64	0.60	0.30	0.09	2.2	8.7	12.7	0.0	5.8	1.5	0.0
90% CI	0.4	0.3	0.4	0.3	0.61	0.57	0.28	0.09	2.1	8.3	12.1	0.0	5.6	1.4	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
A1	87.0	83.7	89.1	75.6	-1.92	-1.92	0.60	0.10	131.1	123.5	163.9	150.0	199.2	59.8	60.2
A2	87.1	84.0	89.8	76.5	-2.53	-2.45	0.79	0.07	147.8	118.1	221.8	150.0	281.6	60.3	60.2
A4	86.6	83.5	89.1	75.9	-1.34	-1.35	0.45	0.13	144.8	132.3	229.7	150.0	260.5	60.7	60.2
A5	86.8	83.3	89.4	75.6	-1.27	-1.26	0.34	0.07	126.2	132.4	164.1	150.0	185.9	59.3	60.2
A6	86.3	83.1	89.3	75.6	-1.72	-1.69	0.19	0.16	140.4	127.2	199.7	150.0	235.4	55.6	60.2
A7	86.6	83.1	89.2	75.2	-1.48	-1.46	0.29	0.16	135.2	130.0	184.5	150.0	212.9	57.8	60.2
A8	86.5	83.2	89.4	75.7	-1.35	-1.33	0.27	0.23	146.0	132.3	236.5	150.0	268.2	58.3	60.2
Avg.	86.7	83.4	89.4	75.7	-1.66	-1.64	0.42	0.13	138.8	128.0	200.0	150.0	234.8	58.8	60.2
Std Dv	0.3	0.3	0.3	0.4	0.45	0.43	0.21	0.06	8.2	5.5	30.3	0.0	36.8	1.8	0.0
90% CI	0.2	0.2	0.2	0.3	0.33	0.31	0.16	0.04	6.0	4.0	22.3	0.0	27.0	1.3	0.0
150 m. FLYOVER -- TARGET IAS 104kts. -- 0.8Vh															
I22	86.2	83.2	88.4	75.1	-0.27	-0.46	-0.04	0.40	126.2	142.9	177.0	150.0	185.8	51.1	53.5
I24	85.9	83.0	87.9	75.0	0.04	-0.12	-0.16	0.43	102.3	148.2	151.7	150.0	153.5	51.1	53.5
I25	86.5	83.0	89.0	74.7	-0.22	-0.39	0.13	0.46	131.3	143.9	191.5	150.0	199.6	53.4	53.5
I26	86.6	83.7	87.6	74.6	-0.65	-0.75	0.50	0.52	122.8	138.7	165.0	150.0	178.4	56.6	53.5
Avg.	86.3	83.2	88.2	74.8	-0.27	-0.43	0.11	0.45	120.6	143.4	171.3	150.0	179.3	53.0	53.5
Std Dv	0.3	0.3	0.6	0.2	0.28	0.26	0.29	0.05	12.7	3.9	17.0	0.0	19.3	2.6	0.0
90% CI	0.4	0.4	0.7	0.3	0.33	0.30	0.34	0.06	14.9	4.6	20.0	0.0	22.7	3.1	0.0
150 m. FLYOVER -- TARGET IAS 91kts. -- 0.7Vh															
J27	86.2	83.4	88.3	75.0	0.04	-0.15	-0.02	0.39	136.2	147.2	212.5	150.0	216.6	45.9	46.8
J28	86.8	83.5	89.2	75.9	0.01	-0.22	0.04	0.39	133.2	145.9	200.2	150.0	205.9	46.3	46.8
J29	87.3	84.7	89.5	76.3	-0.24	-0.40	-0.08	0.62	131.1	143.4	190.4	150.0	199.2	44.4	46.8
J30	86.5	83.4	88.3	75.6	0.47	0.19	-0.10	0.39	147.6	152.5	284.9	150.0	280.2	46.3	46.8
J31	87.1	84.1	89.1	75.6	0.09	-0.15	0.06	0.51	138.6	147.0	222.5	150.0	227.0	46.7	46.8
Avg.	86.8	83.8	88.9	75.7	0.07	-0.15	-0.02	0.46	137.4	147.2	222.1	150.0	225.8	45.9	46.8
Std Dv	0.5	0.6	0.6	0.5	0.26	0.21	0.07	0.10	6.4	3.3	37.1	0.0	32.2	0.9	0.0
90% CI	0.4	0.5	0.5	0.5	0.24	0.20	0.07	0.10	6.1	3.2	35.4	0.0	30.7	0.9	0.0

Table C.9

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 2/85

CORRECTION DATA

SITE: 5 CENTERLINE - 150 M. EAST AUG. 27,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
C32	91.4	88.4	93.2	79.9	0.42	0.27	0.04	-	115.8	106.7	118.6	103.7	115.2	30.2	29.3
C34	93.4	90.7	95.1	82.4	0.30	0.18	0.17	-	128.0	105.7	134.2	103.7	131.6	30.9	29.3
C36	93.7	91.1	95.9	83.2	-0.35	-0.42	0.18	-	125.9	98.9	122.1	103.7	128.0	29.5	29.3
C38	94.0	91.5	95.5	83.0	0.44	0.31	-0.38	-	92.6	107.2	107.3	103.7	103.8	27.5	29.3
C40	90.8	88.0	91.6	78.8	-0.66	-0.73	0.38	-	123.6	95.4	114.6	103.7	124.4	30.1	29.3
C42	93.4	90.9	94.8	83.4	0.35	0.24	-0.23	-	125.6	106.4	130.8	103.7	127.5	28.3	29.3
C44	93.6	91.0	94.4	81.7	-0.22	-0.28	-0.14	-	97.3	100.4	101.2	103.7	104.5	27.7	29.3
C46	93.7	90.8	96.0	83.1	0.42	0.29	-0.15	-	126.9	106.9	133.6	103.7	129.6	29.0	29.3
C48	92.7	89.9	96.2	83.6	0.13	0.00	0.16	-	125.7	103.5	127.5	103.7	127.6	30.4	29.3
C50	93.2	90.5	95.0	82.0	0.50	0.34	0.13	-	124.8	107.5	130.9	103.7	126.2	31.1	29.3
Avg.	93.0	90.3	94.8	82.1	0.13	0.02	0.02	-	118.6	103.9	122.1	103.7	121.8	29.5	29.3
Std Dv	1.1	1.2	1.4	1.6	0.40	0.37	0.23	-	13.0	4.2	11.5	0.0	10.3	1.3	0.0
90% CI	0.6	0.7	0.8	0.9	0.23	0.22	0.13	-	7.5	2.4	6.7	0.0	6.0	0.7	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
B33	87.8	84.4	90.0	75.5	-2.26	-2.32	0.81	-	90.1	86.6	86.6	111.4	111.4	29.3	29.3
B37	86.8	83.1	90.1	75.2	-2.76	-2.78	-0.14	-	108.6	82.3	86.8	111.4	117.5	22.6	29.3
B39	87.7	84.1	90.4	75.4	-1.66	-1.76	0.17	-	106.6	91.6	95.6	111.4	116.2	26.3	29.3
B41	87.1	83.8	89.4	75.6	-3.62	-3.63	1.03	-	110.3	75.3	80.3	111.4	118.8	27.7	29.3
B43										NO TRACKING DATA					
B45	88.0	84.1	90.7	75.8	-2.00	-2.04	0.20	-	96.3	89.0	89.6	111.4	112.1	25.9	29.3
B47	88.4	84.8	90.9	76.2	-2.97	-2.93	0.62	-	97.7	81.0	81.7	111.4	112.4	26.6	29.3
B49	87.6	84.4	90.6	77.1	-2.49	-2.51	0.26	-	114.2	84.9	93.1	111.4	122.1	25.4	29.3
B52										NO TRACKING DATA					
Avg.	87.6	84.1	90.3	75.8	-2.54	-2.57	0.42	-	103.4	84.4	87.6	111.4	115.8	26.3	29.3
Std Dv	0.5	0.5	0.5	0.6	0.65	0.62	0.41	-	8.8	5.4	5.6	0.0	4.0	2.1	0.0
90% CI	0.4	0.4	0.4	0.5	0.48	0.45	0.30	-	6.4	4.0	4.1	0.0	2.9	1.5	0.0
300 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
B9	82.7	79.7	83.6	70.8	0.14	0.03	-0.79	-	121.9	304.3	358.6	300.0	353.5	56.4	66.9
B10	83.2	80.4	83.5	70.6	0.61	0.42	-0.66	-	113.4	316.3	344.7	300.0	326.9	59.7	66.9
B11	82.6	79.7	83.0	69.2	0.35	0.19	-0.73	-	97.9	308.7	311.7	300.0	302.9	57.8	66.9
B13	83.0	80.0	83.2	70.1	0.02	-0.16	-0.21	-	126.2	298.6	369.9	300.0	371.7	57.1	60.2
B14	82.9	79.8	84.3	71.1	0.37	0.18	-0.59	-	114.9	308.4	340.1	300.0	330.8	59.7	66.9
B15										NO TRACKING DATA					
B16	82.7	79.6	83.6	70.9	0.09	-0.15	0.09	-	128.4	298.6	381.0	300.0	382.8	61.2	60.2
Avg.	82.8	79.9	83.5	70.5	0.26	0.08	-0.48	-	117.1	305.8	351.0	300.0	344.8	58.6	64.6
Std Dv	0.2	0.3	0.4	0.7	0.22	0.22	0.35	-	11.1	6.8	24.6	0.0	30.0	1.8	3.4
90% CI	0.2	0.2	0.4	0.6	0.18	0.18	0.29	-	9.2	5.6	20.2	0.0	24.7	1.5	2.8

Table C.23

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AA2	86.4	83.5	88.5	75.3	-2.68	-2.55	0.84	0.23	135.1	115.9	164.3	150.0	212.5	60.2	60.2
AA3	87.3	84.4	90.4	76.7	-1.60	-1.55	0.43	0.26	125.1	128.2	156.6	150.0	183.2	59.1	60.2
AA5	86.4	83.4	88.9	75.7	-2.12	-2.03	0.53	0.26	132.5	122.2	165.7	150.0	203.3	58.3	60.2
AA6										NO TRACKING DATA					
AA7	87.4	83.8	90.5	76.4	-0.76	-0.77	0.12	0.26	119.1	139.2	159.3	150.0	171.6	58.5	60.2
AA8	87.0	84.3	89.2	76.1	-1.32	-1.29	0.34	0.26	127.5	131.9	166.3	150.0	189.1	59.2	60.2
Avg.	86.9	83.9	89.5	76.0	-1.70	-1.64	0.45	0.25	127.8	127.5	162.4	150.0	192.0	59.0	60.2
Std Dv	0.5	0.4	0.9	0.6	0.74	0.68	0.26	0.01	6.3	8.9	4.3	0.0	16.2	0.7	0.0
90% CI	0.4	0.4	0.9	0.5	0.70	0.65	0.25	0.01	6.0	8.5	4.1	0.0	15.4	0.7	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AZ27	86.3	83.1	88.9	75.5	-1.67	-1.61	0.54	0.54	130.3	126.8	166.2	150.0	196.7	60.1	60.2
AZ28	87.3	84.0	90.5	76.9	-0.28	-0.29	0.10	0.54	120.6	145.4	168.9	150.0	174.2	60.1	60.2
AZ29	86.6	83.7	89.7	76.2	-0.19	-0.20	-0.04	0.57	127.8	146.7	185.6	150.0	189.8	58.7	60.2
AZ30	85.8	83.2	87.9	74.7	0.01	-0.01	-0.18	0.57	119.5	149.6	171.8	150.0	172.3	57.6	60.2
Avg.	86.5	83.5	89.3	75.8	-0.53	-0.53	0.10	0.55	124.5	142.1	173.1	150.0	183.3	59.1	60.2
Std Dv	0.6	0.5	1.1	1.0	0.77	0.73	0.31	0.02	5.3	10.4	8.6	0.0	11.9	1.2	0.0
90% CI	0.8	0.5	1.3	1.1	0.90	0.86	0.37	0.02	6.3	12.2	10.1	0.0	14.0	1.4	0.0

Table C.24

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CC10	93.2	90.4	95.3	82.3	-0.31	-0.31	0.06	-	123.8	100.4	120.8	103.7	124.7	29.1	29.3
CC12	92.6	89.9	95.4	83.0	-0.13	-0.13	0.07	-	127.1	102.4	128.5	103.7	130.0	29.5	29.3
CC14	90.5	87.5	92.4	79.4	-1.21	-1.15	0.42	-	122.9	91.5	109.0	103.7	123.5	29.4	29.3
CC16	92.0	89.3	94.2	81.3	-1.73	-1.66	1.07	-	118.1	86.2	97.7	103.7	117.5	32.7	29.3
CC18	93.3	91.1	95.3	82.9	-2.98	-2.88	0.75	-	98.7	75.2	76.1	103.7	104.9	27.4	29.3
CC20	93.4	90.9	95.2	82.4	-0.71	-0.68	0.24	-	122.1	96.1	113.5	103.7	122.4	29.3	29.3
CC22	93.1	90.2	95.1	82.7	0.31	0.27	0.10	-	124.9	106.8	130.3	103.7	126.4	30.7	29.3
CC24	93.1	90.6	94.6	82.3	-0.89	-0.86	0.04	-	125.8	94.2	116.2	103.7	127.9	27.6	29.3
Avg.	92.6	90.0	94.7	82.0	-0.96	-0.92	0.34	-	120.4	94.1	111.5	103.7	122.2	29.4	29.3
Std Dv	1.0	1.1	1.0	1.2	1.04	0.99	0.38	-	9.2	10.0	17.8	0.0	7.9	1.7	0.0
90% CI	0.7	0.8	0.7	0.8	0.69	0.67	0.26	-	6.2	6.7	11.9	0.0	5.3	1.1	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CZ31	92.5	90.1	93.3	81.5	-1.15	-1.10	0.43	-	129.0	91.8	118.2	103.7	133.4	29.5	29.3
CZ33	92.4	89.9	95.1	82.4	-0.57	-0.56	0.40	-	128.7	97.4	124.8	103.7	132.9	30.7	29.3
CZ35	93.4	90.7	95.7	84.4	0.68	0.63	-0.43	-	113.4	111.0	120.9	103.7	112.9	27.9	29.3
CZ37	91.9	89.2	93.1	80.4	0.66	0.60	-0.12	-	124.3	110.6	133.9	103.7	125.5	29.9	29.3
CZ39	93.1	90.8	94.2	83.3	-1.91	-1.83	0.73	-	142.0	84.8	137.8	103.7	168.4	29.8	29.3
Avg.	92.7	90.1	94.3	82.4	-0.46	-0.45	0.20	-	127.5	99.1	127.1	103.7	134.6	29.6	29.3
Std Dv	0.6	0.6	1.1	1.6	1.13	1.07	0.47	-	10.3	11.5	8.4	0.0	20.6	1.0	0.0
90% CI	0.5	0.6	1.1	1.5	1.08	1.02	0.45	-	9.8	11.0	8.0	0.0	19.7	1.0	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
K41	93.0	90.3	93.3	81.4	-2.78	-2.64	1.04	-	143.0	77.5	129.0	103.7	172.5	29.9	29.3
K42	92.6	89.9	95.1	82.2	-0.12	-0.14	-0.02	-	121.2	101.9	119.2	103.7	121.2	28.8	29.3
K43	93.2	91.0	94.7	82.9	-1.55	-1.50	0.37	-	132.4	87.8	118.9	103.7	140.4	28.2	29.3
K45	93.0	90.7	94.3	81.9	-1.23	-1.18	0.28	-	127.2	90.8	114.1	103.7	130.2	28.3	29.3
K46	92.9	90.7	94.8	83.2	-1.65	-1.59	0.47	-	135.3	87.0	123.7	103.7	147.4	28.6	29.3
Avg.	92.9	90.5	94.5	82.3	-1.47	-1.41	0.43	-	131.9	89.0	121.0	103.7	142.4	28.8	29.3
Std Dv	0.2	0.4	0.7	0.7	0.95	0.90	0.39	-	8.2	8.8	5.6	0.0	19.6	0.7	0.0
90% CI	0.2	0.4	0.7	0.7	0.91	0.86	0.37	-	7.9	8.3	5.4	0.0	18.6	0.7	0.0
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
KK52	91.5	88.6	93.9	80.7	-2.48	-2.37	0.35	-	130.6	79.5	104.7	103.7	136.5	26.1	29.3
KK53	92.6	90.3	94.0	81.4	-2.84	-2.73	0.72	-	125.7	76.4	94.1	103.7	127.7	27.5	29.3
KK54	92.4	89.6	95.5	82.5	-0.32	-0.33	-0.03	-	122.4	99.6	117.9	103.7	122.7	28.3	29.3
KK55	91.9	89.2	94.2	81.2	-0.43	-0.44	-0.33	-	95.9	98.5	99.0	103.7	104.2	26.2	29.3
KK56	90.5	87.6	92.7	79.7	-2.35	-2.24	0.46	-	132.6	80.7	109.7	103.7	140.9	27.0	29.3
KK57	93.5	90.9	95.1	82.8	-0.72	-0.72	-0.25	-	98.5	95.5	96.5	103.7	104.8	26.0	29.3
Avg.	92.1	89.4	94.2	81.4	-1.52	-1.47	0.15	-	117.6	88.4	103.7	103.7	122.8	26.9	29.3
Std Dv	1.0	1.2	1.0	1.1	1.15	1.09	0.42	-	16.3	10.6	9.0	0.0	15.6	0.9	0.0
90% CI	0.8	1.0	0.8	0.9	0.95	0.89	0.35	-	13.4	8.7	7.4	0.0	12.8	0.8	0.0

Table C.25

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
8/ 1/85

CORRECTION DATA

SITE: 5 CENTERLINE - 150 M. EAST AUG. 28,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
M47										NO TRACKING DATA					
M48	90.5	87.5	91.3	77.8	1.61	1.48	0.77	-	126.3	119.5	148.3	102.0	126.5	39.4	29.3
M49	86.9	84.0	88.1	75.5	-4.48	-4.29	0.51	-	95.2	63.4	63.6	102.0	102.4	23.1	29.3
M50	88.0	84.8	90.4	76.2	0.13	0.10	-0.64	-	97.5	102.8	103.7	102.0	102.8	25.5	29.3
M51	89.7	86.8	91.4	78.2	-1.95	-1.88	0.16	-	93.9	82.6	82.8	102.0	102.2	26.0	29.3
Avg.	88.8	85.8	90.3	76.9	-1.17	-1.15	0.20	-	103.2	92.1	99.6	102.0	108.5	28.5	29.3
Std Dv	1.6	1.6	1.5	1.3	2.64	2.51	0.61	-	15.5	24.4	36.3	0.0	12.0	7.4	0.0
90% CI	1.9	1.9	1.8	1.5	3.11	2.95	0.72	-	18.2	28.7	42.8	0.0	14.1	8.7	0.0
APPROACH -- BELL QUIET TYPE (SEE TEXT)															
MM58	89.4	86.4	89.3	76.0	-1.56	-1.50	1.08	-	135.1	86.2	122.2	102.0	144.5	33.2	29.3
MM59	88.5	85.4	90.5	77.0	-1.89	-1.82	-0.25	-	98.1	83.1	83.9	102.0	103.0	23.8	29.3
MM60										NO TRACKING DATA					
MM61	88.3	85.1	89.8	76.0	-0.11	-0.13	-0.68	-	96.1	100.1	100.6	102.0	102.5	24.7	29.3
MM62	88.4	85.4	89.5	76.6	1.26	1.16	-0.77	-	99.2	115.3	116.8	102.0	103.3	26.9	29.3
Avg.	88.7	85.6	89.8	76.4	-0.58	-0.57	-0.15	-	107.1	96.2	105.9	102.0	113.3	27.1	29.3
Std Dv	0.5	0.6	0.5	0.5	1.45	1.37	0.85	-	18.7	14.7	17.3	0.0	20.8	4.2	0.0
90% CI	0.6	0.7	0.6	0.6	1.70	1.61	1.00	-	22.0	17.3	20.3	0.0	24.5	5.0	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BB11	88.0	84.1	90.5	74.9	-2.77	-2.71	0.55	-	101.9	83.6	85.4	111.4	113.9	26.8	29.3
BB13	88.8	85.4	90.5	76.5	-3.20	-3.00	0.58	-	114.4	81.7	89.7	111.4	122.4	26.5	29.3
BB15	87.6	84.0	89.1	74.3	-1.16	-1.15	0.08	-	109.6	98.6	104.7	111.4	118.3	27.3	29.3
BB17	88.4	84.8	90.4	75.8	-2.87	-2.82	0.56	-	105.0	82.6	85.6	111.4	115.4	26.6	29.3
BB19	88.1	84.4	90.2	75.5	-1.24	-1.21	0.35	-	100.2	97.9	99.4	111.4	113.2	28.9	29.3
BB23	89.4	85.9	91.7	76.9	0.93	0.87	-0.86	-	90.2	122.2	122.2	111.4	111.4	25.8	29.3
BB25	88.8	84.9	91.6	76.5	0.60	0.56	-0.75	-	90.2	118.2	118.2	111.4	111.4	25.8	29.3
Avg.	88.4	84.8	90.6	75.8	-1.39	-1.35	0.07	-	101.7	97.8	100.7	111.4	115.1	26.8	29.3
Std Dv	0.6	0.7	0.9	0.9	1.67	1.60	0.63	-	9.2	16.9	15.1	0.0	4.0	1.0	0.0
90% CI	0.5	0.5	0.7	0.7	1.23	1.18	0.46	-	6.7	12.4	11.1	0.0	2.9	0.8	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BZ32	87.2	83.7	90.0	75.7	-1.39	-1.36	0.09	-	92.2	96.2	96.3	111.4	111.5	26.8	29.3
BZ34	86.1	82.8	89.2	75.0	-3.06	-2.97	0.29	-	118.0	81.1	91.9	111.4	126.2	24.7	29.3
BZ36	86.2	82.8	88.6	74.4	-3.16	-3.07	0.48	-	114.4	80.1	87.9	111.4	122.3	25.6	29.3
BZ38	87.1	83.6	89.8	74.6	-1.31	-1.28	0.06	-	90.3	96.9	96.9	111.4	111.4	26.7	29.3
BZ40	87.0	83.0	89.9	75.0	-1.00	-0.99	-0.14	-	93.4	100.1	100.2	111.4	111.6	26.2	29.3
Avg.	86.7	83.2	89.5	74.9	-1.98	-1.93	0.16	-	101.7	90.9	94.7	111.4	116.6	26.0	29.3
Std Dv	0.5	0.4	0.6	0.5	1.04	1.00	0.24	-	13.4	9.5	4.8	0.0	7.1	0.9	0.0
90% CI	0.5	0.4	0.5	0.5	0.99	0.95	0.23	-	12.8	9.1	4.6	0.0	6.8	0.8	0.0

Table C.26

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
7/25/85

SITE: 1 — CENTERLINE - CENTER — AUG. 29,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CY2	92.1	89.3	94.3	81.1	-1.28	-1.21	0.63	-	127.2	104.6	131.3	119.3	149.8	30.7	29.3
CY4	92.9	90.0	93.5	80.7	-0.57	-0.56	0.52	-	91.2	112.4	112.4	119.3	119.4	31.6	29.3
CY6	92.8	90.1	93.8	81.0	-1.02	-0.98	0.53	-	127.3	107.3	134.9	119.3	150.0	30.6	29.3
CY8	92.8	89.9	93.3	81.0	-1.29	-1.23	0.49	-	128.4	104.3	133.1	119.3	152.3	29.7	29.3
CY10	93.6	90.7	94.1	81.1	-0.84	-0.81	0.12	-	117.7	109.2	123.3	119.3	134.8	28.2	29.3
CY12	92.3	89.4	94.9	82.4	0.21	0.18	-0.07	-	121.6	121.8	143.0	119.3	140.1	29.3	29.3
CY14	92.8	90.0	94.3	81.8	-0.74	-0.71	0.15	-	126.9	110.4	138.1	119.3	149.2	28.6	29.3
CY16	93.3	90.6	94.8	82.7	-0.83	-0.80	0.41	-	132.4	109.3	148.0	119.3	161.5	30.2	29.3
CY18	92.6	90.1	95.0	82.4	-1.28	-1.23	0.32	-	122.9	104.2	124.1	119.3	142.1	28.6	29.3
Avg.	92.8	90.0	94.2	81.6	-0.85	-0.82	0.34	-	121.7	109.3	132.0	119.3	144.4	29.7	29.3
Std Dv	0.4	0.5	0.6	0.7	0.48	0.45	0.23	-	12.2	5.5	10.9	0.0	12.2	1.1	0.0
90% CI	0.3	0.3	0.4	0.5	0.29	0.28	0.14	-	7.6	3.4	6.7	0.0	7.5	0.7	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BY3	88.4	85.2	89.0	75.4	-1.31	-1.19	0.38	-	116.6	134.4	150.4	150.9	168.8	29.3	29.3
BY5	89.1	85.3	90.2	75.9	-0.57	-0.54	-0.35	-	117.0	143.7	161.2	150.9	169.3	26.1	29.3
BY9	89.3	85.5	91.5	76.3	-1.26	-1.24	0.48	-	107.7	132.6	139.3	150.9	158.4	29.7	29.3
BY11	88.4	84.9	90.5	76.0	-0.87	-0.88	0.30	-	112.0	138.0	148.9	150.9	162.8	29.4	29.3
BY13	88.3	84.6	89.5	75.1	-1.00	-1.00	0.35	-	101.2	136.3	138.9	150.9	153.8	29.4	29.3
BY15	92.4	88.4	94.6	79.5	3.36	3.25	-0.94	-	110.6	207.5	221.6	150.9	161.2	30.0	29.3
BY17	89.9	86.4	89.7	75.4	-0.68	-0.68	0.43	-	105.6	140.7	146.1	150.9	156.7	30.7	29.3
Avg.	89.4	85.8	90.7	76.2	-0.33	-0.33	0.09	-	110.1	147.6	158.1	150.9	161.6	29.2	29.3
Std Dv	1.4	1.3	1.9	1.5	1.65	1.60	0.54	-	5.7	26.7	29.0	0.0	5.9	1.5	0.0
90% CI	1.1	0.9	1.4	1.1	1.21	1.17	0.39	-	4.2	19.6	21.3	0.0	4.3	1.1	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AY19	86.1	82.7	89.0	75.2	-2.77	-2.66	0.76	-	108.3	113.1	119.1	150.0	158.0	58.1	60.2
AY20	87.1	83.7	89.8	75.7	-2.18	-2.09	0.51	-	128.0	120.2	152.6	150.0	190.4	57.3	60.2
AY21	86.9	83.5	89.9	76.4	-2.12	-2.07	0.61	-	128.2	121.0	154.0	150.0	190.9	59.0	60.2
AY22	86.5	83.2	88.6	74.7	-2.09	-2.01	0.61	-	128.2	121.0	154.0	150.0	190.8	59.0	60.2
AY23	87.5	84.2	89.9	76.5	0.34	0.28	-0.16	-	110.6	154.2	164.7	150.0	160.3	59.3	60.2
AY24	88.0	84.7	90.4	77.4	0.32	0.28	-0.16	-	110.6	154.2	164.7	150.0	160.3	59.3	60.2
AY25	87.4	84.0	89.7	76.6	-0.69	-0.67	0.07	-	130.5	139.7	183.7	150.0	197.3	57.9	60.2
AY27	87.6	83.7	90.3	76.5	0.13	0.11	-0.13	-	127.7	151.5	191.6	150.0	189.7	58.8	60.2
AY28	86.6	83.1	89.4	75.4	0.29	0.27	-0.26	-	127.2	154.1	193.4	150.0	188.2	57.8	60.2
AY29	87.0	83.5	89.5	76.0	0.46	0.42	-0.27	-	117.4	156.7	176.6	150.0	169.0	58.4	60.2
AY30	86.7	83.4	90.6	76.2	0.42	0.39	-0.34	-	129.0	156.2	201.0	150.0	193.0	57.4	60.2
Avg.	87.0	83.6	89.7	76.1	-0.72	-0.70	0.11	-	122.3	140.2	168.7	150.0	180.7	58.4	60.2
Std Dv	0.6	0.6	0.6	0.7	1.30	1.24	0.42	-	8.7	17.6	23.8	0.0	15.3	0.7	0.0
90% CI	0.3	0.3	0.3	0.4	0.71	0.68	0.23	-	4.8	9.6	13.0	0.0	8.4	0.4	0.0

Table C.27

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
7/26/85

CORRECTION DATA

SITE: 2 SIDELINE - 150 M. SOUTH AUG. 29,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CY2	90.7	88.0	91.0	77.6	-0.15	-0.15	0.25	-	92.8	189.4	189.6	191.7	191.9	30.8	29.3
CY4	92.1	89.4	92.4	78.7	-0.07	-0.08	0.33	-	102.5	190.7	195.4	191.7	196.4	31.5	29.3
CY6	91.2	88.4	91.8	78.3	-0.52	-0.52	0.41	-	97.4	181.9	183.4	191.7	193.3	31.0	29.3
CY8	92.1	89.0	93.0	78.7	-0.27	-0.27	0.11	-	101.1	186.3	189.9	191.7	195.3	29.4	29.3
CY10	92.3	89.1	92.7	78.7	-0.07	-0.08	-0.15	-	116.3	190.1	212.2	191.7	213.9	28.1	29.3
CY12	91.9	89.1	93.0	80.4	0.20	0.18	-0.07	-	108.9	195.4	206.6	191.7	202.7	29.3	29.3
CY14	92.6	89.3	92.9	78.8	-0.08	-0.09	-0.08	-	111.4	189.9	204.0	191.7	205.9	28.6	29.3
CY16	90.6	87.7	91.7	78.7	0.05	0.03	0.15	-	94.4	192.4	193.0	191.7	192.3	30.4	29.3
CY18	89.1	86.2	89.3	75.8	-0.46	-0.44	-0.43	-	107.1	182.8	191.3	191.7	200.6	25.6	29.3
Avg.	91.4	88.5	92.0	78.4	-0.15	-0.16	0.06	-	103.6	188.8	196.1	191.7	199.1	29.4	29.3
Std Dv	1.1	1.0	1.2	1.2	0.23	0.22	0.27	-	8.0	4.4	9.4	0.0	7.4	1.8	0.0
90% CI	0.7	0.6	0.8	0.8	0.14	0.14	0.16	-	5.0	2.7	5.8	0.0	4.6	1.1	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BY3	88.4	84.5	89.9	74.5	-0.42	-0.45	0.01	-	99.0	204.3	206.9	212.8	215.4	28.5	29.3
BY5	88.5	84.3	89.8	73.8	-0.01	-0.07	-0.53	-	98.6	212.2	214.6	212.8	215.2	25.9	29.3
BY9	90.1	85.7	90.6	75.5	-0.48	-0.49	0.11	-	98.6	202.6	204.9	212.8	215.2	29.0	29.3
BY11										NO TRACKING DATA					
BY13	88.3	84.4	89.4	74.3	-0.35	-0.36	0.02	-	107.2	205.1	214.7	212.8	222.7	28.6	29.3
BY15	89.6	85.3	90.6	75.2	-0.47	-0.47	0.25	-	97.1	202.9	204.5	212.8	214.4	30.0	29.3
BY17	88.8	84.7	90.7	75.4	-0.19	-0.19	0.20	-	106.7	208.6	217.8	212.8	222.2	30.2	29.3
Avg.	89.0	84.8	90.2	74.8	-0.32	-0.34	0.01	-	101.2	206.0	210.6	212.8	217.5	28.7	29.3
Std Dv	0.7	0.6	0.5	0.7	0.19	0.17	0.28	-	4.5	3.8	5.8	0.0	3.8	1.6	0.0
90% CI	0.6	0.5	0.4	0.6	0.15	0.14	0.23	-	3.7	3.1	4.8	0.0	3.2	1.3	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AY19	88.4	84.9	90.0	76.4	-1.36	-1.27	0.25	1.02	104.1	186.9	192.8	212.1	218.8	58.0	60.2
AY20	88.0	84.1	89.3	75.4	-0.98	-0.96	0.23	0.96	103.2	192.2	197.4	212.1	217.9	58.9	60.2
AY21	89.0	85.6	91.0	77.2	-0.81	-0.80	0.14	1.14	123.4	196.0	234.8	212.1	254.1	58.6	60.2
AY22										NO TRACKING DATA					
AY23	89.0	85.6	91.4	77.4	0.15	0.12	-0.10	1.20	112.9	213.9	232.3	212.1	230.3	59.2	60.2
AY24										NO TRACKING DATA					
AY25	89.0	85.3	90.5	76.1	-0.19	-0.20	-0.08	1.26	100.7	207.4	211.1	212.1	215.9	58.1	60.2
AY27	89.0	85.5	91.0	76.8	0.33	0.30	-0.19	1.20	114.6	218.3	240.1	212.1	233.4	58.9	60.2
AY28	85.8	82.8	87.3	74.6	0.17	0.14	-0.17	1.01	105.4	215.0	223.0	212.1	220.0	58.4	60.2
AY29	88.0	84.2	89.9	75.6	0.28	0.25	-0.20	1.02	104.3	217.5	224.5	212.1	218.9	58.5	60.2
AY30	85.7	82.7	86.6	73.9	-0.19	-0.19	-0.15	0.90	127.9	208.4	264.2	212.1	268.9	57.4	60.2
Avg.	88.0	84.5	89.7	75.9	-0.29	-0.29	-0.03	1.08	110.7	206.2	224.5	212.1	230.9	58.5	60.2
Std Dv	1.3	1.2	1.7	1.2	0.62	0.58	0.18	0.12	9.7	11.7	22.1	0.0	18.7	0.5	0.0
90% CI	0.8	0.7	1.0	0.7	0.38	0.36	0.11	0.08	6.0	7.2	13.7	0.0	11.6	0.3	0.0

Table C.28

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
7/26/85

SITE: 3 SIDELINE - 150 M. NORTH AUG. 29,1984

Ev	CORRECTED EPNL	SEL	PNLTm	ALm	CORRECTIONS (dB) /\1(P)	/\1(A)	/\2	Madv	ACOUSTIC ANGLE (Deg)	TRACKING DATA (Meters) (ACTUAL) CPA	SR	(REFERENCE) CPAR	SRR	SPEED(m/sec) GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CY2	86.1	82.6	85.8	70.9	-0.91	-0.90	0.50	-	102.0	175.5	179.5	191.7	196.0	30.8	29.3
CY4	87.2	83.9	85.4	71.7	-0.53	-0.52	0.51	-	120.8	183.2	213.2	191.7	223.1	31.8	29.3
CY6	-	83.4	87.6	73.4	-0.33	-0.36	-	-	99.7	185.5	188.1	191.7	194.4	31.0	29.3
CY8	87.6	84.2	87.2	73.6	-0.72	-0.69	0.20	-	99.3	178.4	180.8	191.7	194.2	29.1	29.3
CY10	86.9	83.5	85.4	71.6	-0.64	-0.60	0.03	-	100.6	180.1	183.3	191.7	195.0	28.2	29.3
CY12	86.7	83.0	86.9	71.9	-0.04	-0.06	0.00	-	100.4	190.5	193.7	191.7	194.9	29.2	29.3
CY14	87.1	83.7	86.1	72.7	-0.30	-0.28	-0.35	-	127.5	186.2	234.6	191.7	241.5	26.5	29.3
CY16	87.9	84.6	88.0	73.6	-0.74	-0.70	0.41	-	102.0	178.0	182.0	191.7	196.0	30.4	29.3
CY18	87.4	84.0	88.5	74.1	-0.47	-0.44	0.21	-	100.9	182.8	186.2	191.7	195.2	29.7	29.3
Avg.	87.1	83.7	86.7	72.6	-0.52	-0.51	0.19	-	105.9	182.2	193.5	191.7	203.4	29.6	29.3
Std Dv	0.6	0.6	1.1	1.1	0.27	0.25	0.29	-	10.5	4.7	18.6	0.0	17.0	1.6	0.0
90% CI	0.4	0.4	0.7	0.7	0.17	0.16	0.20	-	6.5	2.9	11.5	0.0	10.6	1.0	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BY3	87.8	83.7	89.4	73.8	-0.42	-0.44	0.15	-	107.5	204.3	214.3	212.8	223.1	29.4	29.3
BY5	87.2	83.3	89.5	73.6	-0.01	-0.07	-0.38	-	102.4	212.2	217.3	212.8	217.8	26.8	29.3
BY9	87.3	83.5	90.4	74.8	-0.51	-0.49	0.19	-	116.7	202.6	226.8	212.8	238.1	29.5	29.3
BY11	87.0	83.1	89.4	73.7	-0.32	-0.31	-0.05	-	115.2	206.4	228.1	212.8	235.1	28.3	29.3
BY13	87.5	83.6	88.1	72.6	-0.35	-0.35	0.46	-	109.5	205.1	217.6	212.8	225.7	31.7	29.3
BY15	87.2	83.6	88.7	73.2	-0.24	-0.23	0.00	-	107.8	207.8	218.3	212.8	223.4	28.8	29.3
BY17	87.5	83.7	89.3	73.7	-0.17	-0.20	0.32	-	143.7	208.6	352.8	212.8	359.8	31.1	29.3
Avg.	87.3	83.5	89.3	73.7	-0.29	-0.30	0.10	-	114.7	206.7	239.3	212.8	246.2	29.4	29.3
Std Dv	0.3	0.2	0.7	0.7	0.17	0.14	0.27	-	13.7	3.2	50.3	0.0	50.6	1.6	0.0
90% CI	0.2	0.2	0.5	0.5	0.12	0.11	0.20	-	10.1	2.3	36.9	0.0	37.2	1.2	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AY19	88.8	84.8	91.3	76.9	0.01	-0.03	-0.13	0.90	134.8	211.3	297.7	212.1	298.9	58.2	60.2
AY20	88.3	84.6	89.4	75.2	-0.99	-1.00	0.10	1.08	118.6	192.2	218.8	212.1	241.5	57.2	60.2
AY21	87.7	84.1	89.8	76.0	-1.30	-1.26	0.35	1.14	101.9	186.2	190.3	212.1	216.8	59.1	60.2
AY22										NO TRACKING DATA					
AY23	87.6	84.2	88.9	76.1	0.25	0.19	-0.12	1.07	107.2	215.6	225.7	212.1	222.1	59.2	60.2
AY24										NO TRACKING DATA					
AY25	87.6	84.1	88.7	75.6	-0.47	-0.47	-0.01	1.11	128.1	201.9	256.6	212.1	269.6	57.9	60.2
AY27	-	84.3	89.0	75.8	-0.23	-0.22	-	1.06	98.5	207.3	209.6	212.1	214.5	59.0	60.2
AY28	88.3	84.4	90.5	75.6	0.16	0.14	-0.19	1.14	113.4	215.0	234.2	212.1	231.1	58.2	60.2
AY29	87.3	83.9	88.0	75.2	0.20	0.16	-0.17	0.90	105.6	215.6	223.9	212.1	220.2	58.5	60.2
AY30	88.4	84.6	90.6	75.2	0.56	0.53	-0.38	1.02	116.7	223.7	250.5	212.1	237.5	57.4	60.2
Avg.	88.0	84.3	89.6	75.7	-0.20	-0.22	-0.07	1.05	113.9	207.7	234.1	212.1	239.1	58.3	60.2
Std Dv	0.5	0.3	1.1	0.6	0.61	0.59	0.22	0.09	12.1	12.2	31.1	0.0	28.1	0.7	0.0
90% CI	0.3	0.2	0.7	0.3	0.38	0.37	0.15	0.06	7.5	7.5	19.3	0.0	17.4	0.4	0.0

Table C.29

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 4 CENTERLINE - 150 M. WEST AUG. 29,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CY2	91.5	88.8	93.6	81.4	-0.92	-0.88	0.49	-	136.5	123.0	178.7	135.0	196.1	30.6	29.3
CY4	91.8	89.0	92.4	79.8	-1.09	-1.06	0.75	-	107.3	120.4	126.1	135.0	141.4	31.9	29.3
CY6	92.7	90.0	92.6	79.8	-0.96	-0.92	0.51	-	117.8	122.3	138.2	135.0	152.7	30.6	29.3
CY8	92.4	89.9	93.4	80.9	-1.42	-1.35	0.47	-	124.9	116.5	142.1	135.0	164.7	29.2	29.3
CY10	92.6	89.8	93.4	81.0	-0.49	-0.47	0.07	-	125.7	128.3	157.9	135.0	166.3	28.7	29.3
CY12	92.1	89.6	93.1	80.8	0.00	-0.01	0.09	-	123.0	134.9	160.8	135.0	160.9	29.9	29.3
CY14	91.1	88.2	91.0	78.5	-0.95	-0.91	0.25	-	122.7	122.3	145.4	135.0	160.5	28.8	29.3
CY16										NO TRACKING DATA					
CY18	90.9	88.1	90.9	78.6	-1.52	-1.44	0.67	-	121.6	115.4	135.5	135.0	158.5	30.4	29.3
Avg.	91.9	89.2	92.6	80.1	-0.92	-0.88	0.41	-	122.4	122.9	148.1	135.0	162.6	30.0	29.3
Std Dv	0.7	0.7	1.1	1.1	0.49	0.46	0.25	-	8.2	6.3	16.8	0.0	15.6	1.1	0.0
90% CI	0.5	0.5	0.7	0.7	0.33	0.31	0.17	-	5.5	4.2	11.3	0.0	10.5	0.7	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BY3	86.9	83.4	87.8	74.0	-1.22	-1.13	0.05	-	94.8	171.3	171.9	190.4	191.0	27.4	29.3
BY5	88.0	84.3	87.8	74.1	-0.25	-0.27	-0.62	-	125.5	186.9	229.7	190.4	233.9	25.1	29.3
BY9	87.7	83.6	89.8	74.9	-1.57	-1.44	-0.33	-	120.8	166.6	193.9	190.4	221.6	24.6	29.3
BY11	87.6	84.1	87.7	73.4	-1.08	-1.01	0.15	-	100.9	172.5	175.6	190.4	193.9	28.2	29.3
BY13	87.6	84.0	88.5	74.4	-1.22	-1.14	0.25	-	110.5	170.4	182.0	190.4	203.3	28.6	29.3
BY15	87.6	84.0	88.2	73.7	-0.92	-0.89	0.03	-	99.6	174.4	176.9	190.4	193.0	27.6	29.3
BY17	86.4	83.0	88.4	74.3	-0.86	-0.78	-1.24	-	131.6	177.0	236.9	190.4	254.8	20.9	29.3
Avg.	87.4	83.8	88.3	74.1	-1.02	-0.95	-0.24	-	112.0	174.2	195.3	190.4	213.1	26.1	29.3
Std Dv	0.6	0.5	0.7	0.5	0.41	0.37	0.53	-	14.3	6.5	27.0	0.0	24.5	2.7	0.0
90% CI	0.4	0.3	0.5	0.3	0.30	0.27	0.39	-	10.5	4.8	19.8	0.0	18.0	2.0	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AY19	87.5	84.1	90.7	77.1	-2.71	-2.59	0.77	0.51	131.9	114.5	154.0	150.0	201.6	58.7	60.2
AY20	88.2	84.9	90.7	76.7	-2.09	-2.00	0.47	0.54	126.4	121.4	150.9	150.0	186.4	57.2	60.2
AY21	88.1	84.6	91.1	77.4	-2.27	-2.20	0.70	0.57	127.4	119.2	150.1	150.0	188.9	59.6	60.2
AY22										NO TRACKING DATA					
AY23	88.7	85.4	91.7	78.4	0.14	0.10	-0.06	0.60	128.5	151.1	193.1	150.0	191.8	59.6	60.2
AY24										NO TRACKING DATA					
AY25	87.7	84.7	89.8	76.5	-0.50	-0.49	0.03	0.62	129.8	142.2	185.0	150.0	195.2	58.2	60.2
AY27	88.7	85.2	92.2	78.8	0.52	0.47	-0.24	0.59	125.6	157.4	193.7	150.0	184.6	59.1	60.2
AY28	-	85.1	92.1	77.9	0.25	0.21	-	0.57	132.3	153.3	207.2	150.0	202.8	57.9	60.2
AY29	88.0	84.6	90.9	77.5	0.19	0.17	-0.15	0.51	119.6	152.7	175.5	150.0	172.5	58.9	60.2
AY30	88.9	85.4	91.8	77.2	0.36	0.33	-0.32	0.51	126.2	155.3	192.4	150.0	185.8	57.4	60.2
Avg.	88.2	84.9	91.2	77.5	-0.68	-0.67	0.15	0.56	127.5	140.8	178.0	150.0	190.0	58.5	60.2
Std Dv	0.5	0.4	0.8	0.8	1.30	1.23	0.43	0.04	3.8	17.4	21.5	0.0	9.3	0.9	0.0
90% CI	0.3	0.3	0.5	0.5	0.80	0.77	0.29	0.03	2.4	10.8	13.3	0.0	5.8	0.5	0.0

Table C.30

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

CORRECTION DATA

DOT/TSC
8/ 1/85

SITE: 5 CENTERLINE - 150 M. EAST AUG. 29,1984

	CORRECTED				CORRECTIONS (dB)				ACOUSTIC ANGLE	TRACKING DATA (Meters) (ACTUAL)		(REFERENCE)		SPEED(m/sec)	
Ev	EPNL	SEL	PNLTm	ALm	/\1(P)	/\1(A)	/\2	Madv	(Deg)	CPA	SR	CPAR	SRR	GRND	REF
6 DEGREE APPROACH -- TARGET IAS 57kts. -- ICAO															
CY2	93.1	90.2	95.5	82.5	-1.33	-1.27	0.67	-	126.5	90.2	112.2	103.7	128.9	30.9	29.3
CY4	93.6	90.9	95.3	83.3	-0.17	-0.18	0.33	-	126.6	101.8	126.9	103.7	129.2	31.2	29.3
CY6	92.9	89.9	95.5	83.1	-0.43	-0.44	0.38	-	134.2	99.0	138.1	103.7	144.6	30.9	29.3
CY8	93.5	90.6	94.7	82.4	-0.66	-0.64	0.17	-	131.8	96.7	129.6	103.7	139.0	28.9	29.3
CY10	93.7	91.2	95.5	83.1	-0.90	-0.87	0.14	-	123.1	94.1	112.3	103.7	123.7	28.1	29.3
CY12	92.6	89.6	96.2	83.6	0.23	0.21	-0.14	-	123.1	106.1	126.7	103.7	123.8	28.9	29.3
CY14	93.3	90.6	94.5	81.8	-0.65	-0.63	-0.20	-	92.4	96.6	96.7	103.7	103.7	26.5	29.3
CY16	92.9	90.4	95.6	83.6	0.29	0.26	0.04	-	130.1	106.7	139.5	103.7	135.5	30.2	29.3
CY18	93.6	91.1	95.5	83.2	-1.02	-0.98	0.56	-	133.3	93.1	128.0	103.7	142.5	30.8	29.3
Avg.	93.2	90.5	95.3	83.0	-0.52	-0.50	0.22	-	124.6	98.3	123.3	103.7	130.1	29.6	29.3
Std Dv	0.4	0.5	0.5	0.6	0.55	0.52	0.30	-	12.7	5.7	13.8	0.0	12.5	1.6	0.0
90% CI	0.2	0.3	0.3	0.4	0.34	0.32	0.18	-	7.9	3.5	8.5	0.0	7.8	1.0	0.0
TAKEOFF -- TARGET IAS 57kts. -- ICAO															
BY3	89.3	85.6	91.4	76.7	-1.30	-1.30	0.38	-	108.7	97.4	102.8	111.4	117.6	28.9	29.3
BY5	89.6	85.7	90.9	76.3	-0.99	-1.00	-0.21	-	99.8	100.5	102.0	111.4	113.1	25.9	29.3
BY9	90.2	86.4	92.6	77.8	-1.17	-1.17	0.55	-	119.3	98.7	113.2	111.4	127.8	30.4	29.3
BY11	90.4	86.6	93.5	78.5	-0.64	-0.65	0.52	-	100.0	104.1	105.7	111.4	113.1	31.4	29.3
BY13	89.1	85.3	91.7	76.7	-0.83	-0.82	0.17	-	107.2	102.1	106.9	111.4	116.6	28.6	29.3
BY15	90.6	86.5	92.9	77.7	-0.50	-0.51	-0.20	-	108.9	105.6	111.6	111.4	117.7	26.9	29.3
BY17	90.5	86.7	91.8	77.5	-0.56	-0.54	-0.21	-	103.5	105.3	108.3	111.4	114.6	26.8	29.3
Avg.	90.0	86.1	92.1	77.3	-0.86	-0.86	0.14	-	106.8	102.0	107.2	111.4	117.2	28.4	29.3
Std Dv	0.6	0.6	0.9	0.8	0.31	0.31	0.35	-	6.7	3.2	4.2	0.0	5.1	2.0	0.0
90% CI	0.4	0.4	0.7	0.6	0.23	0.23	0.26	-	4.9	2.4	3.1	0.0	3.7	1.5	0.0
150 m. FLYOVER -- TARGET IAS 117kts. -- 0.9Vh															
AY19	86.6	83.3	88.8	75.5	-2.63	-2.51	0.68	0.51	106.1	114.9	119.6	150.0	156.1	57.6	60.2
AY20	87.7	84.4	90.3	78.0	-2.26	-2.15	0.60	0.54	120.8	119.0	138.5	150.0	174.6	58.1	60.2
AY21	86.9	83.7	89.4	76.1	-2.23	-2.16	0.60	0.57	126.1	119.5	148.0	150.0	185.7	58.3	60.2
AY22										NO TRACKING DATA					
AY23	87.8	84.6	90.1	77.1	0.43	0.37	-0.19	0.60	126.1	155.4	192.4	150.0	185.8	59.2	60.2
AY24										NO TRACKING DATA					
AY25	87.6	84.3	90.7	76.7	-0.40	-0.40	-0.04	0.62	129.2	143.6	185.3	150.0	193.5	57.8	60.2
AY27	-	84.4	90.9	76.9	0.23	0.20	-	0.59	97.5	153.1	154.5	150.0	151.3	58.6	60.2
AY28	87.4	83.9	90.3	76.3	0.13	0.11	-0.16	0.57	125.1	151.7	185.5	150.0	183.4	58.4	60.2
AY29	87.4	84.1	90.2	76.8	0.44	0.54	-0.36	0.51	129.8	158.5	206.3	150.0	195.2	57.7	60.2
AY30	87.0	83.8	88.8	75.4	0.38	0.34	-0.33	0.51	107.7	155.5	163.2	150.0	157.4	57.4	60.2
Avg.	87.3	84.0	90.0	76.5	-0.66	-0.63	0.10	0.56	118.7	141.3	165.9	150.0	175.9	58.1	60.2
Std Dv	0.4	0.4	0.8	0.8	1.32	1.26	0.45	0.04	11.8	18.1	28.4	0.0	16.8	0.6	0.0
90% CI	0.3	0.3	0.5	0.5	0.82	0.78	0.30	0.03	7.3	11.2	17.6	0.0	10.4	0.4	0.0

APPENDIX D

Magnetic Recording Acoustical Data for Static Operations

This appendix contains "As Measured" 1/3-octave noise data for static tests conducted on August 27 and 29, 1984. Time averaged (approximately 32 seconds) data are reported for acoustical emission directivity angles established every 45 degrees from the nose of the helicopter. In addition, the standard deviation of 16 consecutive 2-second data samples for emission angle are presented. A detailed analysis of static data is contained in Section 8.9

The reader may also find it helpful to refer to Figure 11, a diagram of the acoustical emission angle convention.

Table D.1

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

DOT/TSC
1/ 7/85

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 27,1984

HOVER IN GROUND-EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	90	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	74.7	75.2	76.4	75.3	76.1	76.0	72.8	72.5	75.1	30.4	74.9	1.5
15	61.0	61.8	63.0	62.1	63.7	62.9	60.8	60.0	62.1	22.7	61.9	1.3
16	70.6	71.8	73.9	70.5	75.4	72.7	71.1	71.2	72.5	37.9	72.1	1.7
17	67.2	69.3	70.8	69.9	71.7	70.8	68.9	68.8	69.9	39.7	69.7	1.4
18	65.1	67.6	68.3	70.6	69.0	67.4	66.4	65.1	67.8	41.6	67.4	1.9
19	70.1	71.6	72.3	75.6	76.0	76.3	70.6	71.7	73.7	51.2	73.0	2.5
20	63.0	65.5	67.3	69.8	69.5	68.6	64.3	64.1	67.2	48.1	66.5	2.6
21	61.2	62.2	64.4	69.5	69.3	65.7	61.6	61.3	65.7	49.6	64.4	3.5
22	64.9	67.9	73.5	74.0	76.2	73.2	64.4	65.8	72.0	58.6	70.0	4.7
23	62.8	65.9	68.5	73.2	74.0	70.6	64.9	65.1	69.8	58.9	68.1	4.1
24	63.9	69.8	73.7	75.7	77.8	73.3	66.1	66.8	73.1	64.5	70.9	5.0
25	64.4	68.5	73.6	77.2	77.8	71.6	66.2	66.0	73.2	66.6	70.7	5.2
26	64.1	68.0	71.7	77.5	78.7	72.1	66.4	65.6	73.5	68.7	70.5	5.5
27	63.4	67.6	70.3	76.4	78.4	72.4	65.2	65.7	72.9	69.7	69.9	5.5
28	61.2	66.4	69.3	74.3	77.2	71.9	64.5	65.6	71.6	69.7	68.8	5.4
29	60.1	66.5	67.1	65.9	73.5	69.9	62.4	64.9	69.1	67.3	66.3	4.2
30	56.5	64.0	64.5	62.0	69.9	65.1	59.7	61.9	64.6	64.6	62.9	4.0
31	54.7	62.2	62.4	60.0	67.4	63.7	58.3	60.7	62.5	63.1	61.2	3.8
32	51.7	59.4	59.6	56.0	63.4	61.3	55.2	58.0	59.3	60.3	58.1	3.7
33	49.8	56.8	56.6	53.2	60.2	58.9	52.0	55.6	56.5	57.7	55.4	3.5
34	48.6	55.6	54.4	50.8	59.1	57.4	49.3	53.5	55.0	56.3	53.6	3.8
35	47.2	53.6	52.2	48.3	57.2	55.5	46.4	51.1	52.9	54.1	51.4	3.9
36	44.8	50.8	49.8	45.2	54.3	53.1	42.3	48.4	50.2	51.2	48.6	4.2
37	42.0	47.6	46.7	42.1	51.2	50.0	39.0	44.7	47.1	47.6	45.4	4.2
38	40.6	45.5	44.6	39.5	48.4	47.1	37.4	43.2	44.6	44.5	43.3	3.8
39	38.1	42.6	41.4	36.2	44.9	43.5	34.9	40.8	41.4	40.3	40.3	3.6
40	32.9	37.4	36.2	30.8	39.1	37.7	30.2	35.6	36.0	33.5	35.0	3.3
AL	68.0	73.5	75.7	79.3	82.0	77.0	70.3	71.7	76.8	76.8	74.7	4.7
OASPL	79.2	81.4	83.7	85.9	87.7	84.3	79.5	79.8	83.7	-	82.7	3.2
PNL	79.8	84.6	87.1	89.8	92.6	88.2	81.5	82.7	87.9	-	85.8	4.4
PNLT	80.8	85.5	88.2	90.7	93.8	89.6	82.3	83.8	88.9	-	86.8	4.5

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.4	0.3	0.5	0.7	0.4	0.4	0.5	0.5
15	0.4	0.5	0.5	0.9	0.3	0.5	0.7	0.6
16	0.7	0.5	0.8	1.0	0.3	0.5	0.9	0.5
17	0.7	0.7	1.0	2.1	0.6	0.8	1.2	0.8
18	0.9	1.0	2.1	1.8	0.9	1.0	1.9	1.3
19	1.0	2.5	2.7	1.0	0.3	0.9	2.1	1.0
20	1.4	2.2	1.9	2.0	0.7	0.5	1.6	1.1
21	1.7	1.4	2.0	2.3	1.6	1.1	1.4	1.0
22	1.7	2.2	2.4	1.1	1.2	1.2	1.4	1.4
23	1.5	1.8	1.9	2.4	1.4	1.2	2.0	1.0
24	1.5	2.0	2.8	2.4	1.3	1.1	2.1	1.3
25	1.3	1.8	3.5	3.6	2.1	1.4	3.3	1.2
26	1.4	1.8	3.8	3.8	2.4	1.6	2.8	1.6
27	1.7	1.9	3.8	3.7	3.0	2.0	2.9	1.6
28	1.8	2.7	3.9	3.8	2.9	2.5	3.1	2.0
29	2.2	3.4	3.9	4.0	2.8	2.6	2.8	2.6
30	2.2	3.4	3.8	3.6	3.0	2.0	2.7	2.1
31	2.0	3.7	3.5	3.7	3.2	2.3	2.9	2.1
32	1.9	3.8	3.5	3.3	3.1	2.3	2.5	2.1
33	2.0	3.6	3.3	3.6	2.9	2.2	2.1	2.2
34	2.1	3.6	3.0	3.2	3.2	2.4	1.9	2.2
35	1.9	3.3	2.5	2.8	3.2	2.2	1.7	2.[illegible]
36	1.9	3.4	2.5	2.5	3.0	2.1	1.3	2.3
37	2.0	3.4	2.3	2.1	2.9	2.0	1.2	2.2
38	1.9	3.2	2.0	2.0	2.8	2.1	1.0	2.4
39	1.9	3.2	1.9	1.9	2.6	2.1	0.9	2.5
40	1.8	3.2	2.0	1.7	2.4	2.1	0.8	2.2
AL	1.4	2.4	3.4	3.4	2.4	1.8	2.2	1.5
OASPL	0.4	0.9	1.7	2.0	1.3	0.6	1.0	0.3
PNL	1.3	2.0	2.9	3.1	1.9	1.5	1.8	1.2
PNLT	1.3	2.1	2.9	3.0	1.9	1.5	1.6	1.2

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERUING TIME

Table D.2

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 7/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 27,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	73.9	73.3	73.1	73.5	73.0	73.2	74.0	73.6	73.5	28.8	73.4	0.4
15	60.9	60.3	61.2	60.5	60.6	61.6	60.7	60.7	60.8	21.4	60.8	0.4
16	71.7	71.6	71.3	71.5	70.8	71.2	72.4	72.7	71.7	37.1	71.6	0.6
17	69.1	68.8	68.9	68.6	66.9	68.3	69.0	69.7	68.7	38.5	68.7	0.8
18	66.2	66.2	66.9	66.5	65.8	65.4	66.5	67.7	66.5	40.3	66.4	0.7
19	71.2	71.9	69.3	72.7	72.7	72.0	66.5	74.5	71.9	49.4	71.3	2.5
20	63.0	64.6	64.1	64.5	64.8	63.4	62.2	65.7	64.2	45.1	64.0	1.1
21	56.3	58.3	61.9	61.9	61.9	58.2	58.1	60.9	60.2	44.1	59.7	2.2
22	66.2	68.0	68.3	70.3	72.9	63.6	65.0	63.7	68.4	55.0	67.2	3.3
23	60.1	64.2	64.7	67.6	66.2	62.5	63.9	63.5	64.6	53.7	64.1	2.3
24	62.5	67.3	70.0	70.4	71.3	66.3	68.1	67.5	68.6	60.0	67.9	2.8
25	59.6	65.1	67.8	70.7	68.0	62.8	67.5	64.9	66.9	60.3	65.8	3.5
26	57.1	64.8	66.7	69.3	67.0	62.1	65.3	64.1	65.6	60.8	64.5	3.7
27	55.4	64.4	65.8	68.2	65.5	60.9	65.2	62.3	64.6	61.4	63.5	3.9
28	53.1	64.1	65.0	67.8	64.6	60.3	64.6	60.9	64.0	62.1	62.5	4.5
29	49.3	63.2	63.6	66.0	63.9	57.1	62.0	58.8	62.4	61.6	60.5	5.4
30	46.7	62.5	62.2	64.8	63.4	54.8	61.3	56.6	61.3	61.3	59.0	6.0
31	44.9	61.0	60.2	63.0	61.8	52.7	58.7	54.0	59.4	60.0	57.0	6.1
32	42.5	57.8	56.6	59.1	58.4	49.8	55.9	51.1	56.0	57.0	53.9	5.7
33	40.9	55.1	52.9	56.2	56.2	47.4	51.8	48.6	53.1	54.3	51.1	5.3
34	39.5	54.4	50.0	53.7	55.6	46.2	49.1	47.4	51.6	52.9	49.5	5.3
35	37.9	51.7	46.5	51.0	53.5	44.8	46.1	45.9	49.2	50.4	47.2	4.9
36	35.8	49.6	44.1	48.3	50.8	42.6	42.7	44.5	46.7	47.7	44.8	4.8
37	33.9	46.6	40.7	44.1	47.2	39.3	39.3	41.5	43.3	43.8	41.6	4.4
38	35.6	47.7	39.2	41.5	44.2	36.9	37.8	43.3	42.5	42.4	40.8	4.1
39	33.2	45.9	36.3	37.7	39.6	33.2	35.0	41.2	39.9	38.8	37.8	4.4
40	28.2	41.9	31.5	32.4	33.4	27.9	30.4	36.1	35.3	32.8	32.7	4.6
AL	61.9	71.2	71.7	74.1	72.6	66.5	70.6	68.0	70.8	70.8	69.6	3.9
OASPL	78.9	80.0	80.2	81.6	81.1	79.0	79.7	80.5	80.2	-	80.1	0.9
PNL	74.9	82.6	82.7	85.0	84.7	78.7	81.3	80.5	82.3	-	81.3	3.3
PNLT	76.2	83.7	83.6	86.2	86.2	80.0	82.0	81.8	83.4	-	82.5	3.3

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.2	0.2	0.4	0.1	0.2	0.4	0.2	0.2
15	0.3	0.4	0.5	0.3	0.8	0.6	0.2	0.2
16	0.3	0.4	0.7	0.3	0.5	0.4	0.2	0.2
17	0.4	0.4	0.8	0.5	0.9	0.3	0.4	0.4
18	0.7	0.5	0.7	0.7	0.9	0.6	0.6	0.8
19	0.6	0.9	2.1	0.8	0.5	0.6	1.2	1.1
20	0.7	0.4	1.6	1.1	0.9	0.6	0.9	0.9
21	1.1	1.0	1.9	1.7	0.8	1.0	1.2	1.0
22	1.1	1.5	1.7	1.8	0.9	1.0	1.0	1.2
23	1.2	1.1	1.1	0.9	1.2	1.1	0.5	0.9
24	1.0	1.4	0.9	1.2	1.3	1.6	1.3	1.4
25	0.6	1.7	1.6	0.8	1.6	1.5	1.3	1.4
26	1.4	2.2	1.6	1.2	1.6	1.7	1.9	1.3
27	1.4	2.4	1.6	1.3	1.8	1.7	1.7	1.2
28	1.4	2.3	1.9	1.6	2.1	2.0	1.5	1.7
29	2.1	2.5	2.3	2.3	2.2	2.3	1.5	2.0
30	2.8	2.9	2.6	3.0	2.3	3.1	2.1	2.3
31	2.4	3.0	3.0	3.4	2.2	3.1	2.4	2.4
32	1.7	2.9	2.8	3.7	2.2	2.4	3.1	2.5
33	1.6	3.3	2.9	4.1	2.7	2.1	3.0	2.3
34	1.5	3.8	3.2	4.9	3.1	2.2	3.0	2.6
35	1.4	3.8	2.8	4.7	3.1	2.3	3.0	2.4
36	1.4	3.3	3.0	4.2	2.6	2.2	2.8	2.4
37	1.5	3.3	2.8	3.7	2.4	2.1	2.5	2.3
38	1.6	3.4	2.5	3.5	2.4	2.1	2.3	2.8
39	1.5	3.5	2.4	3.1	2.4	2.0	2.4	2.7
40	1.4	3.5	2.3	2.7	2.4	1.8	2.6	2.5
AL	0.9	2.3	1.6	1.6	1.6	1.5	1.5	1.3
OASPL	0.4	0.5	0.7	0.6	0.5	0.2	0.4	0.5
PNL	0.8	2.0	1.3	1.5	1.3	1.3	1.4	1.3
PNLT	0.9	2.0	1.2	1.5	1.4	1.2	1.4	1.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.3

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT
BELL 206-L1 HELICOPTER
1/3 OCTAVE NOISE DATA -- STATIC TESTS
AS MEASURED****

DOT/TSC
1/ 7/85

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 27,1984

GROUND IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	55.1	48.8	57.1	56.0	53.9	46.4	58.1	56.2	55.2	10.5	53.9	4.2
15	53.3	46.6	55.1	54.4	50.8	45.9	55.2	53.4	52.9	13.5	51.8	3.7
16	52.0	45.1	53.6	52.6	49.1	47.0	54.7	53.8	52.0	17.4	51.0	3.5
17	51.8	49.5	52.3	53.0	52.2	53.6	52.8	53.5	52.5	22.3	52.3	1.3
18	46.7	42.4	49.4	48.3	46.2	45.5	49.9	51.1	48.2	22.0	47.4	2.8
19	49.3	49.3	50.4	51.9	49.4	51.2	49.8	51.0	50.4	27.9	50.3	1.0
20	47.4	52.0	52.0	52.3	48.8	60.8	50.5	48.5	54.0	34.9	51.5	4.2
21	43.9	46.2	50.4	52.0	46.5	62.3	47.6	44.5	54.3	38.2	49.2	6.0
22	48.1	51.3	52.2	53.7	50.3	54.4	50.0	49.7	51.7	38.3	51.2	2.1
23	53.9	57.3	56.4	58.7	57.4	62.3	54.7	54.0	57.7	46.8	56.8	2.8
24	52.5	54.9	55.1	57.4	54.9	61.6	53.1	50.8	56.3	47.7	55.0	3.3
25	50.2	52.4	52.1	53.9	50.5	58.8	50.3	49.1	53.4	46.8	52.2	3.1
26	43.6	48.7	48.3	50.6	49.0	56.0	46.9	45.2	50.2	45.4	48.5	3.8
27	47.5	51.4	50.0	50.4	50.0	55.6	50.0	47.2	51.1	47.9	50.3	2.6
28	42.6	46.1	46.9	48.7	48.4	54.2	45.8	42.0	48.5	46.6	46.8	3.8
29	44.4	44.6	47.2	42.0	45.7	51.3	49.5	40.9	47.0	46.2	45.7	3.5
30	45.2	46.8	47.5	41.2	47.0	50.1	48.5	43.4	46.9	46.9	46.2	2.9
31	41.8	43.7	44.8	36.5	43.3	47.9	44.8	40.7	43.9	44.5	42.9	3.4
32	41.6	43.7	44.4	36.0	40.8	44.9	43.2	40.5	42.6	43.6	41.9	2.9
33	40.4	41.0	44.1	35.4	38.9	42.1	41.1	38.3	40.8	42.0	40.2	2.6
34	38.2	39.3	43.8	34.4	38.2	40.1	40.4	37.1	39.7	41.0	38.9	2.7
35	39.8	41.4	44.9	34.2	36.7	39.7	40.3	40.4	40.6	41.8	39.7	3.2
36	41.3	45.1	45.1	34.4	35.9	37.1	40.2	43.8	41.9	42.9	40.4	4.2
37	38.3	40.7	41.8	31.9	33.8	32.7	36.4	39.0	38.1	38.6	36.8	3.7
38	41.5	43.1	44.1	32.6	33.4	33.7	38.4	40.4	40.2	40.1	38.4	4.6
39	39.2	41.0	41.3	29.6	30.4	30.2	36.1	38.0	37.8	36.7	35.7	5.0
40	40.6	44.3	44.9	29.6	29.3	30.8	37.3	38.4	40.2	37.7	36.9	6.4
AL	54.7	57.2	57.9	56.1	56.0	61.6	56.6	54.1	57.4	57.4	56.8	2.3
OASPL	62.8	63.4	65.3	65.7	63.7	69.6	64.8	63.5	65.4	-	64.8	2.2
PNL	67.7	70.6	71.4	68.0	67.6	73.2	68.2	68.3	69.8	-	69.4	2.1
PNLT	69.2	72.0	72.5	68.5	68.4	73.9	69.4	69.7	70.6	-	70.4	2.1

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	2.9	1.5	2.6	2.0	3.5	1.4	4.3	2.3
15	3.0	1.4	3.2	1.9	2.9	1.1	4.1	2.6
16	2.5	0.6	2.7	1.8	2.7	1.7	3.9	2.5
17	1.4	1.1	2.7	0.9	2.7	1.3	2.5	2.2
18	2.8	0.8	1.5	1.5	2.8	2.0	3.7	2.2
19	1.5	1.4	1.1	1.3	2.2	0.9	2.1	2.0
20	0.9	1.1	2.3	1.4	2.2	4.1	2.1	1.9
21	0.8	1.3	2.0	1.5	2.3	2.8	2.1	1.5
22	1.6	1.0	1.6	1.2	2.4	0.9	2.4	1.5
23	1.5	0.9	1.4	1.0	2.8	1.9	3.5	1.8
24	1.7	1.2	1.3	1.0	3.1	2.0	2.7	1.6
25	1.6	1.4	1.4	0.9	3.0	2.1	2.9	2.0
26	2.3	1.3	1.5	1.2	3.5	1.4	2.9	2.0
27	2.0	1.7	1.4	1.8	3.9	1.4	3.5	2.5
28	2.1	1.7	1.6	1.9	4.1	1.6	3.3	2.6
29	2.0	1.7	1.9	2.3	2.5	1.5	2.5	3.0
30	2.7	1.8	2.3	2.9	1.9	1.8	2.8	3.9
31	2.9	2.2	2.7	2.7	1.9	2.2	3.4	4.1
32	3.0	2.3	3.2	1.7	2.2	2.7	4.0	3.8
33	2.7	3.0	3.7	2.1	2.8	3.0	3.6	3.4
34	2.2	2.4	3.8	2.2	2.7	3.0	3.5	2.7
35	2.4	1.7	3.5	2.2	2.3	3.1	2.9	3.2
36	2.4	2.0	3.5	2.2	2.1	2.8	2.7	3.1
37	2.4	1.8	3.6	2.1	2.0	3.0	2.7	2.7
38	2.6	2.0	3.7	2.1	1.8	3.0	2.9	2.5
39	2.5	2.0	3.5	1.9	1.7	3.0	2.9	2.0
40	2.5	2.1	4.1	1.8	1.7	3.5	2.8	2.4
AL	1.8	1.2	1.9	0.9	2.3	1.3	2.6	2.3
OASPL	0.8	0.8	1.0	0.5	2.4	1.2	1.1	1.0
PNL	2.0	1.3	2.3	0.9	2.5	1.4	2.5	2.4
PNLT	2.0	1.3	2.4	1.0	2.5	1.4	2.5	2.5

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.4

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

DOT/TSC
1/ 7/85

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 27,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	75.5	76.4	76.3	75.7	80.1	74.2	73.1	72.8	76.1	31.4	75.5	2.3
15	61.6	62.5	62.7	60.7	66.7	60.3	59.8	60.9	62.5	23.1	61.9	2.2
16	71.5	72.7	73.8	69.1	77.4	70.0	69.6	72.2	72.9	38.3	72.0	2.7
17	69.8	71.7	72.5	67.0	75.5	68.9	68.5	70.4	71.3	41.1	70.5	2.7
18	67.2	69.9	71.5	69.3	73.1	67.0	67.1	67.3	69.6	43.4	69.0	2.3
19	74.8	69.5	74.4	77.8	79.7	81.2	77.2	76.8	77.5	55.0	76.4	3.6
20	66.2	65.5	69.3	70.0	71.8	71.1	68.9	68.0	69.3	50.2	68.8	2.2
21	61.0	61.1	65.3	66.3	68.7	64.2	63.7	63.9	65.0	48.9	64.3	2.6
22	68.0	67.0	73.3	70.7	73.3	72.1	72.0	68.8	71.2	57.8	70.6	2.4
23	61.8	62.1	68.4	67.5	67.1	66.7	67.5	64.1	66.2	55.3	65.6	2.6
24	57.9	60.9	69.4	63.4	63.0	60.5	62.4	61.8	63.8	55.2	62.4	3.3
25	47.2	50.9	58.2	55.6	54.4	51.0	51.0	49.6	53.6	47.0	52.2	3.6
26	46.8	47.2	54.2	52.9	53.2	50.9	49.7	47.4	51.1	46.3	50.3	3.0
27	48.5	48.4	54.6	53.7	55.8	54.3	53.0	49.8	53.0	49.8	52.3	2.9
28	50.5	51.4	55.4	56.1	57.8	57.9	56.6	52.4	55.5	53.6	54.8	2.9
29	54.7	53.5	55.5	56.9	47.9	59.6	57.3	53.4	55.9	55.1	54.8	3.5
30	53.2	54.8	55.2	57.5	48.4	60.7	60.0	55.8	57.0	57.0	55.7	3.9
31	54.3	55.2	55.8	57.7	48.9	61.8	61.1	57.3	57.9	58.5	56.5	4.1
32	53.5	53.7	54.5	56.3	46.5	60.8	60.6	56.1	57.0	58.0	55.2	4.5
33	52.6	52.7	52.9	55.3	44.7	59.2	58.8	54.8	55.5	56.7	53.9	4.5
34	51.3	51.9	51.8	54.3	43.7	56.9	56.2	53.0	53.6	54.9	52.4	4.1
35	50.4	51.5	50.6	52.0	42.9	54.6	53.6	51.2	51.7	52.9	50.8	3.5
36	47.9	49.4	48.7	49.9	40.7	52.0	50.2	48.9	49.3	50.3	48.5	3.4
37	45.2	46.8	46.8	48.1	38.5	48.7	47.4	46.0	46.6	47.1	45.9	3.2
38	43.8	45.4	44.0	45.3	35.9	45.6	45.0	44.2	44.3	44.2	43.6	3.2
39	41.3	43.1	40.9	42.1	32.7	42.4	41.7	41.9	41.5	40.4	40.8	3.3
40	36.5	38.4	35.9	37.1	27.7	37.2	36.4	37.4	36.5	34.0	35.8	3.4
AL	64.3	64.6	67.7	67.7	65.8	70.2	69.5	66.1	67.5	67.5	67.0	2.2
OASPL	80.5	80.5	82.6	82.0	85.6	83.6	81.3	80.9	82.5	-	82.1	1.8
PNL	78.4	78.6	82.3	82.0	81.1	84.4	82.4	80.4	81.7	-	81.2	2.0
PNLT	79.8	79.5	83.4	83.4	83.1	86.4	83.9	81.9	83.0	-	82.7	2.3

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.2	0.2	0.6	0.4	0.4	0.6	0.8	0.7
15	0.4	0.3	0.7	0.6	0.5	0.6	0.8	0.8
16	0.4	0.5	0.7	1.0	0.8	0.5	1.1	0.6
17	0.6	0.8	1.4	3.0	1.3	0.7	1.1	0.8
18	0.8	0.8	2.2	2.4	1.5	1.3	1.3	1.0
19	0.9	1.5	2.1	1.1	0.5	0.8	3.8	0.7
20	0.9	0.8	2.2	1.4	0.9	0.9	2.0	0.7
21	1.0	0.9	2.1	1.7	1.6	0.8	1.3	1.2
22	1.0	1.4	1.2	2.0	1.1	0.8	1.6	2.1
23	0.6	1.0	0.9	1.6	1.6	1.0	1.1	0.7
24	1.0	1.2	1.7	1.3	2.7	1.7	0.9	1.3
25	2.0	1.7	1.7	1.5	2.3	2.0	1.4	1.4
26	2.2	1.8	1.8	1.6	2.8	3.0	2.1	2.6
27	1.7	2.4	2.3	1.6	3.0	3.9	1.8	2.9
28	1.7	2.5	2.5	2.6	2.8	3.7	1.7	2.1
29	2.7	2.3	2.2	3.2	3.2	3.5	2.1	1.9
30	2.4	2.5	2.5	3.5	2.7	3.1	2.5	2.6
31	2.7	2.5	2.8	3.8	2.8	3.0	2.7	3.1
32	2.4	2.2	2.6	4.0	2.5	2.7	2.6	2.9
33	2.2	2.2	2.5	4.1	2.2	2.6	2.8	2.8
34	1.8	2.3	2.7	4.2	2.3	2.4	3.0	2.8
35	1.7	2.4	2.8	4.1	2.7	2.2	2.8	2.8
36	1.3	2.2	3.0	4.0	2.8	2.3	2.8	2.6
37	1.0	2.0	3.3	3.9	2.4	2.0	2.9	2.4
38	1.2	2.0	3.3	3.7	2.2	1.8	2.8	2.1
39	1.1	2.1	3.2	3.6	2.0	1.9	2.6	1.7
40	1.0	1.9	2.9	3.3	1.7	2.0	2.4	1.8
AL	1.5	1.6	1.2	2.2	1.2	2.0	2.1	1.8
OASPL	0.4	0.3	0.8	0.5	0.4	0.6	1.5	0.4
PNL	1.0	1.4	1.1	1.6	1.0	1.3	2.1	1.2
PNLT	1.2	1.5	1.2	1.7	1.0	1.2	2.3	1.2

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.5

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 7/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 27,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	0	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	73.8	72.8	73.2	72.1	73.2	73.0	73.0	72.4	73.0	28.3	72.9	0.5
15	61.8	59.3	61.0	59.1	61.5	59.9	60.8	59.7	60.5	21.1	60.4	1.0
16	71.1	70.4	71.6	70.3	70.8	70.8	70.8	70.6	70.8	36.2	70.8	0.4
17	70.0	69.6	69.9	68.9	68.7	69.6	69.6	69.6	69.5	39.3	69.5	0.5
18	68.7	67.9	67.8	67.8	66.9	67.4	67.8	67.3	67.7	41.5	67.7	0.5
19	74.1	72.1	68.9	69.4	73.8	75.3	71.0	73.9	72.8	50.3	72.3	2.4
20	66.3	65.4	63.7	62.0	65.1	66.3	65.1	65.5	65.1	46.0	64.9	1.4
21	60.7	60.3	58.1	58.5	58.4	58.2	59.9	58.9	59.2	43.1	59.1	1.0
22	69.0	64.6	65.9	65.9	70.4	67.7	66.5	64.7	67.3	53.9	66.8	2.1
23	61.2	59.7	61.1	61.3	62.5	61.7	62.6	60.1	61.4	50.5	61.3	1.0
24	59.5	57.2	62.0	58.3	59.6	60.1	59.4	61.4	59.9	51.3	59.7	1.5
25	49.7	48.6	48.9	49.3	48.0	46.3	45.4	48.0	48.2	41.6	48.0	1.5
26	44.4	42.9	43.3	43.6	44.3	40.5	40.9	44.3	43.2	38.4	43.0	1.5
27	45.5	43.9	44.8	44.0	44.7	42.8	45.4	45.4	44.6	41.4	44.6	0.9
28	47.7	47.8	47.6	46.7	46.0	46.5	49.4	48.3	47.6	45.7	47.5	1.1
29	49.3	49.1	49.6	46.3	45.6	48.7	51.4	48.6	48.9	48.1	48.6	1.8
30	51.8	52.1	52.2	48.9	48.1	51.2	54.1	49.8	51.4	51.4	51.0	2.0
31	52.0	53.2	52.7	49.8	48.2	53.2	55.4	50.2	52.4	53.0	51.8	2.3
32	50.9	52.0	52.8	49.1	47.3	52.7	55.4	49.5	51.9	52.9	51.2	2.6
33	50.5	51.0	52.6	48.8	47.6	51.0	54.2	48.2	51.0	52.2	50.5	2.2
34	49.3	50.3	52.6	48.8	48.1	49.5	52.7	46.6	50.2	51.5	49.7	2.1
35	48.0	48.9	51.3	47.7	47.0	48.1	50.9	45.2	48.8	50.0	48.4	2.0
36	46.2	47.2	49.5	44.9	44.6	45.2	48.2	43.2	46.6	47.6	46.1	2.1
37	43.7	45.3	46.9	42.3	42.2	41.4	45.3	40.1	43.9	44.4	43.4	2.3
38	45.0	46.2	45.0	39.9	39.0	39.0	43.6	40.4	43.1	43.0	42.3	3.0
39	42.1	44.4	42.3	36.3	35.0	35.2	40.4	38.3	40.5	39.4	39.2	3.6
40	36.7	39.6	37.6	31.5	30.0	30.8	35.8	34.4	35.7	33.2	34.5	3.5
AL	62.9	62.5	63.6	60.9	62.0	63.0	64.5	61.3	62.7	62.7	62.6	1.2
OASPL	79.9	78.6	78.5	77.7	79.5	79.8	78.7	79.0	79.0	-	79.0	0.7
PNL	77.9	76.7	77.8	75.2	77.3	77.4	78.1	76.1	77.0	-	77.1	1.0
PNLT	79.2	77.7	79.0	76.2	78.9	78.8	79.0	77.4	78.1	-	78.3	1.1

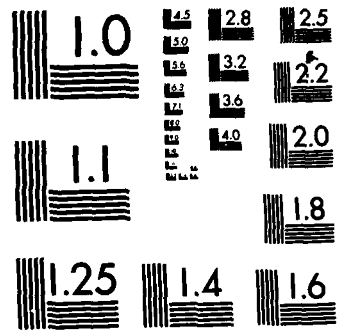
STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.5	0.1	0.4	0.3	0.4	0.2	0.3	0.2
15	1.0	0.3	0.6	0.5	0.9	0.3	0.8	0.3
16	0.5	0.4	0.2	0.4	0.6	0.3	0.4	0.3
17	0.6	0.5	0.4	0.3	0.6	0.3	0.3	0.4
18	0.6	0.5	0.4	0.4	0.7	0.3	0.6	0.6
19	0.8	0.7	1.4	1.1	0.4	1.0	1.9	0.7
20	1.4	0.5	0.8	0.6	0.5	0.9	0.8	0.5
21	2.0	1.3	0.6	0.9	0.9	1.1	0.9	0.8
22	1.1	0.9	1.8	1.2	0.3	1.8	1.6	1.2
23	0.8	0.8	1.0	0.7	0.5	0.9	0.7	0.5
24	1.0	1.2	0.8	1.1	1.0	1.5	1.0	1.0
25	1.4	0.9	0.8	1.3	1.0	1.8	1.0	1.5
26	2.4	0.9	1.0	2.0	1.3	2.3	1.2	1.7
27	2.2	1.7	1.5	1.9	1.8	2.1	1.1	1.8
28	2.4	2.5	1.4	2.0	2.3	2.1	2.1	2.7
29	2.6	2.5	1.7	2.3	2.3	1.9	3.2	2.7
30	3.4	3.[illegible]	1.9	2.3	2.4	2.3	3.4	2.5
31	3.9	3.4	1.4	2.8	2.5	2.7	4.0	2.3
32	4.4	3.3	1.4	2.7	3.1	3.0	4.3	2.0
33	4.7	3.5	1.7	2.7	3.2	3.1	4.0	2.1
34	4.6	3.7	2.1	3.1	3.3	2.8	3.9	2.0
35	4.8	3.9	1.9	3.1	3.1	2.8	3.7	2.0
36	4.8	4.0	1.7	2.8	2.8	2.9	3.7	2.2
37	4.8	3.8	1.5	2.7	2.6	2.3	3.6	1.8
38	4.9	3.9	1.4	2.6	2.7	2.0	3.6	1.6
39	4.7	3.9	1.5	2.7	2.7	1.8	3.4	1.5
40	4.3	3.8	1.5	2.5	2.1	1.6	3.1	1.4
AL	2.3	2.0	0.8	1.1	0.9	1.1	2.7	1.1
OASPL	0.6	0.3	0.2	0.4	0.4	0.5	0.4	0.3
PNL	2.1	1.7	0.8	1.0	0.9	0.7	2.3	0.9
PNLT	2.2	1.7	0.8	1.1	0.9	0.7	2.3	1.0

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

AD-A159 898 INTERNATIONAL CIVIL AVIATION ORGANIZATION HELICOPTER NOISE MEASUREMENT RE..(U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR.. 3/5

UNCLASSIFIED J S NEWMAN ET AL. SEP 85 FAA/EE-85-6 F/G 14/2 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Table D.6

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 27,1984

GROUND IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	53.1	46.9	47.0	54.5	50.0	53.6	-	52.2	51.9	7.2	51.0	3.1
15	49.9	44.8	45.2	51.8	47.8	52.4	-	49.1	49.5	10.1	48.7	3.0
16	46.9	43.9	43.9	49.6	46.4	48.9	-	45.8	47.0	12.4	46.5	2.2
17	52.8	47.7	50.1	50.3	51.3	54.1	-	51.6	51.5	21.3	51.1	2.1
18	46.7	44.4	43.9	47.6	44.3	45.7	-	47.4	45.9	19.7	45.7	1.5
19	51.1	50.1	52.4	52.6	51.3	52.1	-	52.0	51.7	29.2	51.7	0.9
20	51.2	58.9	57.0	53.7	49.5	51.7	-	50.5	54.5	35.4	53.2	3.5
21	49.4	58.7	54.1	50.5	44.9	49.2	-	48.7	53.0	36.9	50.8	4.4
22	48.2	51.0	53.9	52.4	49.4	51.0	-	50.4	51.3	37.9	50.9	1.9
23	50.5	54.0	54.2	55.8	54.8	54.7	-	52.2	54.0	43.1	53.7	1.8
24	44.9	49.2	48.6	50.7	48.2	48.5	-	46.3	48.4	39.8	48.1	1.9
25	39.3	40.5	39.9	42.2	38.5	39.1	-	39.2	40.0	33.4	39.8	1.2
26	32.4	36.4	31.7	36.2	31.1	33.0	-	34.6	34.1	29.3	33.6	2.1
27	33.8	39.4	33.4	36.5	33.3	33.8	-	35.8	35.7	32.5	35.1	2.3
28	33.1	38.5	34.4	36.3	34.1	34.3	-	34.3	35.4	33.5	35.0	1.8
29	32.2	38.0	36.0	35.5	33.4	36.3	-	36.2	35.7	34.9	35.4	1.9
30	33.6	42.7	41.9	40.2	38.3	38.7	-	41.6	40.3	40.3	39.6	3.1
31	32.7	42.4	42.5	37.6	36.3	38.0	-	42.1	40.0	40.6	38.8	3.7
32	33.9	44.5	43.4	37.7	35.6	38.0	-	45.4	41.7	42.7	39.8	4.6
33	34.8	44.0	45.5	37.3	36.1	37.1	-	45.2	42.0	43.2	40.0	4.7
34	33.4	44.2	44.9	37.0	38.8	38.6	-	47.0	42.7	44.0	40.6	4.9
35	35.5	47.7	46.0	37.3	36.0	39.2	-	50.9	45.4	46.6	41.8	6.3
36	36.4	50.3	45.6	36.8	34.2	36.7	-	53.1	47.2	48.2	41.9	7.7
37	33.2	47.4	43.3	34.4	32.5	34.4	-	48.3	43.4	43.9	39.1	7.0
38	34.8	50.3	43.9	34.9	31.7	35.5	-	50.2	45.5	45.4	40.2	7.8
39	31.3	49.0	40.7	31.8	29.0	31.7	-	47.4	43.3	42.2	37.3	8.3
40	31.8	52.7	40.2	31.6	28.6	32.2	-	48.1	45.8	43.3	37.9	9.3
AL	47.7	58.9	55.8	51.3	49.6	50.7	-	59.5	55.5	55.5	53.4	4.7
OASPL	60.8	64.8	63.1	62.9	60.5	62.4	-	62.9	62.7	-	62.5	1.5
PNL	61.8	73.6	70.0	64.9	63.0	64.3	-	74.3	70.4	-	67.4	5.2
PNLT	62.4	74.5	70.8	66.1	64.1	65.2	-	75.4	71.3	-	68.4	5.2

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

BAND NO.	0	45	90	135	180	225	270	315
14	1.9	1.9	2.0	2.5	1.6	2.5	0.0	2.0
15	1.7	1.2	0.5	2.5	1.7	3.5	0.0	1.6
16	1.8	0.5	0.6	2.2	1.6	2.7	0.0	0.9
17	1.1	2.5	2.1	0.9	0.8	1.1	0.0	0.9
18	1.8	1.4	0.6	1.7	1.2	1.6	0.0	1.1
19	1.4	1.1	1.0	1.0	0.9	1.2	0.0	0.9
20	1.3	3.1	1.1	1.1	1.0	1.0	0.0	0.5
21	1.4	3.4	2.0	0.8	1.1	1.3	0.0	1.0
22	1.0	0.5	1.0	0.6	0.8	0.7	0.0	0.6
23	0.9	0.8	1.3	0.6	0.8	0.9	0.0	0.5
24	0.8	2.4	1.0	0.7	0.8	0.9	0.0	0.8
25	0.6	1.3	0.3	1.3	0.6	0.9	0.0	0.9
26	1.2	1.9	0.3	0.7	0.7	0.9	0.0	1.6
27	1.8	2.8	0.6	0.7	1.1	1.5	0.0	1.3
28	1.3	2.4	0.0	1.8	1.2	1.0	0.0	0.4
29	1.7	1.6	1.1	2.0	2.3	2.1	0.0	0.9
30	2.2	1.8	1.3	2.7	3.7	2.3	0.0	1.7
31	1.8	1.4	1.2	2.9	3.8	2.8	0.0	2.3
32	1.7	1.5	1.2	3.4	4.1	2.9	0.0	3.1
33	1.8	2.1	3.0	3.3	4.8	2.8	0.0	3.6
34	2.0	2.8	2.8	3.5	5.2	3.0	0.0	3.8
35	1.6	2.9	2.0	3.3	4.9	3.1	0.0	3.5
36	1.8	2.2	2.6	3.1	4.5	3.1	0.0	3.1
37	1.5	3.3	2.7	3.1	[illegible]	3.0	0.0	3.0
38	1.4	3.9	2.5	2.7	3.5	3.1	0.0	3.1
39	1.4	4.3	2.3	2.5	3.2	3.2	0.0	2.8
40	1.4	5.1	1.8	2.4	2.9	3.1	0.0	1.7
AL	0.9	2.4	1.5	1.3	1.7	1.6	0.0	2.8
OASPL	0.8	1.9	0.8	0.8	0.4	0.9	0.0	1.1
PNL	1.1	2.0	1.6	1.4	1.9	1.8	0.0	2.6
PNLT	1.2	1.9	1.4	1.5	2.0	1.7	0.0	2.6

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.7

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

DOT/TSC
1/ 8/85

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 27,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	66.6	67.4	67.4	65.9	66.3	67.6	64.5	64.6	66.4	21.7	66.3	1.2
15	53.6	55.0	56.3	55.1	55.7	55.2	53.5	55.8	55.1	15.7	55.0	1.0
16	64.2	66.3	66.3	63.6	66.9	65.6	63.0	63.8	65.2	30.6	65.0	1.5
17	61.9	64.6	63.7	63.8	64.0	64.6	61.6	61.6	63.4	33.2	63.2	1.3
18	59.8	62.8	61.2	63.8	61.3	61.1	59.0	57.8	61.2	35.0	60.8	2.0
19	63.4	67.2	64.9	68.5	68.4	68.0	63.3	61.4	66.3	43.8	65.6	2.7
20	56.7	62.2	60.5	63.0	61.9	61.1	56.2	54.9	60.4	41.3	59.6	3.1
21	53.5	55.6	56.1	61.6	61.0	58.0	51.6	51.6	57.6	41.5	56.1	3.9
22	55.9	60.1	64.3	65.5	68.0	64.8	54.9	54.7	63.4	50.0	61.0	5.3
23	53.7	58.1	59.0	64.6	65.8	61.9	53.0	53.5	61.1	50.2	58.7	5.1
24	54.9	61.8	63.7	67.0	70.0	63.4	52.9	54.6	64.4	55.8	61.0	6.3
25	54.9	60.0	61.5	67.3	69.1	60.3	52.7	51.9	63.4	56.8	59.7	6.4
26	53.8	58.7	58.0	67.3	69.9	59.2	51.0	50.0	63.5	58.7	58.5	7.2
27	51.4	57.0	55.1	66.3	68.9	58.4	49.9	48.8	62.4	59.2	57.0	7.4
28	48.0	54.8	52.2	62.8	67.6	56.1	48.3	48.2	60.4	58.5	54.7	7.3
29	45.5	51.7	48.2	57.1	63.9	52.8	46.5	44.5	56.4	55.6	51.3	6.6
30	43.0	49.2	45.0	53.0	59.2	48.7	44.0	43.2	52.1	52.1	48.2	5.7
31	42.1	46.7	42.8	50.1	55.9	48.0	43.2	41.9	49.2	49.8	46.3	4.9
32	39.4	43.7	40.2	45.8	51.4	46.7	41.3	40.3	45.6	46.6	43.6	4.2
33	37.1	41.5	37.5	43.3	48.5	44.6	39.4	38.3	43.0	44.2	41.3	4.0
34	35.2	39.2	35.1	40.8	46.8	43.1	36.9	35.7	41.1	42.4	39.1	4.2
35	32.9	36.9	32.6	38.2	44.7	40.7	34.0	33.1	38.8	40.0	36.6	4.4
36	-	33.5	-	34.6	40.9	37.2	30.1	29.5	36.1	37.1	34.3	4.3
37	-	29.0	-	30.9	37.6	33.3	-	-	33.9	34.4	32.7	3.7
38	-	26.0	-	27.0	32.8	28.9	-	-	29.5	29.4	28.7	3.0
39	-	23.3	-	22.7	27.1	23.6	-	-	24.6	23.5	24.2	2.0
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	56.6	62.0	61.7	69.2	72.6	63.4	55.8	55.2	66.2	66.2	62.1	6.3
OASPL	71.7	74.5	74.3	77.1	79.0	75.1	70.5	70.4	75.0	-	74.1	3.1
PNL	68.5	73.6	73.5	79.7	82.9	75.4	67.5	67.0	77.0	-	73.5	5.8
PNLT	69.3	74.4	74.6	80.6	84.0	76.6	68.4	67.8	77.9	-	74.5	5.9

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

BAND NO.	0	45	90	135	180	225	270	315
14	0.6	0.4	0.6	0.8	0.6	0.5	1.0	0.8
15	0.8	0.6	0.7	1.0	0.7	0.9	1.1	1.1
16	1.0	0.7	0.9	1.1	0.6	0.6	1.1	0.9
17	1.1	0.9	1.2	1.5	0.6	0.7	1.7	0.9
18	1.3	1.3	2.2	1.4	0.8	1.0	2.2	1.3
19	1.3	2.8	2.8	1.1	0.6	1.0	3.8	1.7
20	1.8	3.4	1.9	2.1	1.1	0.9	1.9	1.7
21	1.6	1.9	1.6	2.3	1.5	1.4	2.3	1.7
22	2.0	2.2	2.7	1.3	1.2	1.3	3.6	1.9
23	2.6	2.2	2.1	2.7	1.4	1.9	4.2	1.9
24	2.6	2.0	3.0	2.6	1.3	1.9	2.9	2.5
25	3.3	2.4	3.4	3.5	2.3	2.6	3.4	3.2
26	3.6	2.6	3.9	4.2	2.9	3.0	3.1	3.0
27	3.6	2.8	4.4	5.1	3.4	3.7	3.0	3.6
28	3.1	3.4	4.0	5.1	3.5	3.5	2.4	3.1
29	2.9	3.2	3.3	4.7	4.1	2.6	2.0	2.1
30	2.5	3.3	2.7	4.2	3.9	1.9	1.9	1.8
31	2.4	2.9	2.4	3.9	3.4	2.0	2.0	1.3
32	2.2	2.9	2.6	3.1	3.2	1.8	1.9	1.1
33	2.0	2.7	2.4	2.9	3.5	1.8	2.0	1.6
34	2.2	2.2	2.5	2.8	2.8	2.0	1.9	1.7
35	2.2	2.3	2.6	2.8	3.0	1.8	1.8	2.2
36	-	2.4	-	2.9	2.7	1.9	1.7	2.0
37	-	2.4	-	2.6	3.2	2.1	-	-
38	-	1.9	-	1.8	2.8	1.8	-	-
39	-	1.3	-	1.2	2.7	1.5	-	-
40	-	-	-	-	-	-	-	-
AL	2.6	2.4	2.9	3.8	2.8	2.2	2.1	1.9
OASPL	0.9	1.1	1.2	1.8	1.4	0.6	1.3	0.7
PNL	2.5	2.1	2.6	3.3	2.3	1.8	2.2	1.9
PNLT	2.4	2.2	2.7	3.2	2.4	1.8	2.2	1.9

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.8

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER — DOT/TSC 1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 27,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	65.3	65.1	64.7	65.2	65.1	65.6	65.3	64.7	65.1	20.4	65.1	0.3
15	54.2	54.4	52.5	58.3	59.4	56.6	52.6	53.6	55.9	16.5	55.2	2.6
16	63.9	64.6	64.1	63.8	63.8	63.4	64.1	64.0	64.0	29.4	64.0	0.3
17	62.1	62.8	62.7	61.5	61.8	60.8	61.9	61.8	62.0	31.8	61.9	0.6
18	59.2	59.9	60.7	59.2	61.4	58.0	59.2	59.8	59.8	33.6	59.7	1.0
19	63.9	66.2	63.7	64.7	65.8	62.7	58.5	65.3	64.3	41.8	63.8	2.5
20	56.1	58.8	58.4	56.8	61.6	54.4	55.1	57.2	57.9	38.8	57.3	2.3
21	48.5	52.0	55.5	53.6	59.7	47.7	50.5	52.2	54.2	38.1	52.5	3.9
22	56.3	61.3	61.3	61.0	64.0	51.7	55.0	54.0	59.8	46.4	58.1	4.4
23	48.6	57.4	57.5	56.6	58.5	47.9	53.3	52.7	55.5	44.6	54.1	4.1
24	49.8	60.8	63.1	58.9	61.1	52.0	57.6	56.3	59.1	50.5	57.4	4.6
25	45.9	57.7	59.0	58.1	57.1	45.1	55.2	52.9	55.9	49.3	53.9	5.5
26	42.1	56.6	57.0	56.2	54.9	42.9	51.7	51.4	54.0	49.2	51.6	6.0
27	39.3	56.0	54.9	53.8	52.0	40.6	50.1	48.8	52.1	48.9	49.4	6.3
28	37.0	54.9	52.7	52.0	48.7	40.0	47.7	45.1	50.2	48.3	47.3	6.3
29	35.8	52.5	48.7	47.6	45.0	38.1	43.4	42.2	46.9	46.1	44.2	5.5
30	34.3	51.0	46.2	44.8	42.7	38.0	42.1	41.0	45.0	45.0	42.5	5.1
31	33.2	48.9	44.2	41.8	40.1	37.7	40.4	39.5	42.9	43.5	40.7	4.6
32	31.5	45.4	42.3	37.9	37.1	36.7	38.8	37.1	40.1	41.1	38.3	4.1
33	29.8	42.2	40.2	35.3	34.8	35.4	36.3	35.1	37.5	38.7	36.1	3.7
34	-	40.1	38.0	33.1	33.5	33.6	33.7	33.0	35.9	37.2	35.0	2.8
35	-	37.6	35.2	30.4	-	31.6	30.6	-	34.1	35.3	33.1	3.2
36	-	35.0	32.4	27.4	-	-	-	-	32.6	33.6	31.6	3.9
37	-	31.4	-	-	-	-	-	-	31.4	31.9	31.4	-
38	-	31.5	-	-	-	-	-	-	31.5	31.4	31.5	-
39	-	27.6	-	-	-	-	-	-	27.6	26.5	27.6	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	49.9	61.6	60.9	59.2	59.2	50.5	56.1	55.0	58.2	58.2	56.5	4.5
OASPL	70.8	72.9	72.6	72.1	73.3	70.3	70.6	71.3	71.9	-	71.7	1.1
PNL	62.7	73.1	73.1	70.3	71.3	63.5	67.9	67.4	70.6	-	68.7	4.0
PNLT	64.0	74.2	73.9	71.4	72.2	64.5	68.4	68.5	71.5	-	69.6	4.0

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA @ACOUSTIC EMMISION ANGLE SHOWN ABOVE

BAND NO.	0	45	90	135	180	225	270	315
14	0.4	0.6	0.5	1.0	0.8	0.9	0.3	0.5
15	0.9	1.5	0.5	3.4	1.9	1.6	0.5	1.0
16	0.5	0.6	0.5	0.7	1.4	0.5	0.3	0.6
17	0.4	0.4	0.7	0.7	1.6	0.7	0.6	0.9
18	0.5	0.4	0.7	0.9	2.3	0.7	0.8	0.6
19	0.5	0.9	2.2	1.0	2.3	1.3	1.1	0.9
20	0.5	0.5	1.9	1.2	2.9	1.4	1.0	0.9
21	1.1	1.0	2.0	1.7	3.0	1.8	1.4	1.5
22	1.5	1.6	1.9	2.1	2.1	2.5	1.8	2.1
23	1.8	1.4	1.9	1.8	2.5	1.3	1.4	1.4
24	2.3	1.2	2.1	1.9	3.0	3.1	2.1	0.9
25	2.3	1.6	2.8	2.1	2.9	2.9	1.8	1.2
26	2.1	2.1	3.2	2.7	2.7	3.1	2.1	2.2
27	2.3	2.7	4.2	2.9	3.6	2.1	2.1	2.8
28	2.2	3.0	4.2	4.0	4.2	1.9	1.9	2.9
29	2.1	3.6	2.9	4.1	3.3	1.9	1.8	2.3
30	1.6	3.9	2.8	3.0	2.7	1.6	1.8	2.5
31	1.5	4.1	2.5	2.7	2.4	1.5	1.4	2.1
32	1.3	3.7	2.4	2.1	2.3	1.5	1.1	1.6
33	1.0	3.2	2.3	1.5	2.0	1.6	1.4	1.7
34	-	3.1	2.6	1.4	2.2	1.5	1.1	2.0
35	-	3.0	2.7	1.1	-	1.6	1.1	-
36	-	2.6	2.9	0.8	-	-	-	-
37	-	2.7	-	-	-	-	-	-
38	-	2.4	-	-	-	-	-	-
39	-	2.0	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	1.1	2.1	2.3	2.1	2.4	1.5	1.5	1.4
OASPL	0.3	0.5	0.9	0.6	1.5	0.4	0.3	0.4
PNL	1.0	1.6	2.0	1.7	2.4	1.5	1.4	1.2
PNLT	1.1	1.7	2.0	1.8	2.4	1.6	1.4	1.2

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

Table D.9

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

DOT/TSC
1/ 8/85

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 27,1984

GROUND IDLE *****

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	90	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	58.3	51.4	57.1	51.2	51.7	52.6	56.0	54.5	54.9	10.2	54.1	2.8
15	56.3	50.1	54.6	51.3	51.7	50.8	53.5	53.3	53.2	13.8	52.7	2.1
16	54.5	47.8	52.8	45.6	48.5	49.6	52.0	51.7	51.1	16.5	50.3	2.9
17	52.1	46.8	50.3	45.8	48.7	48.4	50.3	49.7	49.4	19.2	49.0	2.0
18	47.9	42.8	47.3	44.5	44.8	44.7	47.2	47.1	46.1	19.9	45.8	1.8
19	47.1	46.2	48.2	45.7	46.2	45.9	46.7	47.6	46.8	24.3	46.7	0.9
20	45.2	47.8	48.2	46.0	45.8	61.5	47.7	46.7	53.4	34.3	48.6	5.3
21	43.3	43.7	45.5	45.2	45.0	59.6	45.4	43.2	51.4	35.3	46.4	5.4
22	42.9	45.3	45.6	44.8	45.2	46.8	44.7	42.7	44.9	31.5	44.7	1.4
23	47.2	50.7	48.4	50.0	51.0	58.2	47.2	45.0	51.8	40.9	49.7	4.0
24	45.2	48.5	46.9	49.3	48.3	56.4	44.5	42.5	49.9	41.3	47.7	4.2
25	42.0	46.5	45.1	45.7	44.4	53.2	39.8	40.8	46.9	40.3	44.7	4.2
26	36.4	42.2	41.6	41.1	42.4	47.0	36.8	36.7	41.9	37.1	40.5	3.7
27	37.2	43.8	39.7	38.9	42.6	45.2	37.2	35.2	41.2	38.0	40.0	3.6
28	34.0	38.5	36.0	36.6	40.3	40.7	34.7	33.4	37.6	35.7	36.8	2.8
29	32.5	35.6	32.7	31.6	36.3	36.1	33.3	32.1	34.2	33.4	33.8	1.9
30	32.2	36.2	31.3	31.4	35.1	33.2	32.1	32.2	33.3	33.3	33.0	1.8
31	30.2	32.5	28.5	29.1	32.2	30.3	30.4	30.7	30.7	31.3	30.5	1.4
32	30.3	32.9	28.2	28.7	29.6	28.0	29.2	29.2	29.8	30.8	29.5	1.6
33	30.2	31.8	28.0	28.3	26.7	25.9	27.4	26.4	28.5	29.7	28.1	2.0
34	28.4	31.0	28.0	26.8	24.4	25.0	27.0	24.5	27.4	28.7	26.9	2.3
35	30.3	34.3	29.0	25.9	24.1	24.8	27.5	26.4	29.1	30.3	27.8	3.3
36	31.2	36.8	28.8	25.6	24.4	24.1	26.9	28.4	30.5	31.5	28.3	4.2
37	27.1	31.6	25.5	23.4	23.2	22.3	23.5	23.6	26.2	26.7	25.0	3.1
38	26.9	31.7	24.7	21.6	20.8	-	22.4	22.5	26.1	26.0	24.4	3.8
39	23.7	26.7	21.2	-	17.5	-	-	-	23.5	22.4	22.3	3.9
40	-	25.5	-	-	16.2	-	-	-	23.0	20.5	20.8	6.6
AL	45.2	49.2	46.5	46.9	47.9	54.0	44.6	43.6	48.6	48.6	47.2	3.3
OASPL	62.7	59.2	61.9	58.8	59.5	66.3	60.9	60.1	61.9	-	61.2	2.5
PNL	57.5	61.9	58.2	58.4	58.8	64.9	56.3	55.1	60.6	-	58.9	3.1
PNLT	58.1	63.2	58.5	58.9	59.5	66.4	56.8	56.2	61.5	-	59.7	3.4

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	2.8	2.5	1.7	1.9	1.4	3.2	4.1	1.9
15	3.0	2.8	1.1	2.0	1.3	3.4	3.7	1.8
16	2.4	2.7	1.2	1.3	1.3	2.7	4.0	2.2
17	2.4	1.6	1.3	1.1	0.8	2.4	3.4	2.1
18	2.6	1.8	0.9	0.5	1.2	2.1	4.0	2.4
19	1.7	1.1	0.7	0.8	1.1	1.2	2.0	1.8
20	1.3	1.1	1.4	0.8	0.8	5.2	1.9	2.1
21	1.5	1.9	1.1	1.2	1.3	4.2	1.8	1.7
22	0.8	0.8	1.1	2.2	0.9	0.9	1.7	1.1
23	1.2	1.0	1.3	2.2	0.6	3.5	1.8	1.6
24	1.3	1.1	1.3	2.3	0.6	3.3	2.0	1.6
25	1.5	1.4	1.4	2.1	0.8	3.9	1.7	1.7
26	1.4	1.5	1.3	2.0	0.9	2.3	1.0	1.2
27	2.2	2.4	1.5	2.1	1.1	2.3	1.0	1.5
28	1.8	2.5	1.1	1.6	1.5	2.5	0.8	1.5
29	1.3	3.1	0.8	1.1	1.8	1.5	1.1	1.4
30	1.2	3.8	0.8	1.2	1.6	1.7	0.7	1.3
31	1.0	3.2	0.7	1.4	0.9	1.3	0.6	1.4
32	1.2	3.0	1.1	1.9	0.7	1.0	0.7	1.3
33	1.2	2.9	1.4	2.2	0.9	0.8	0.7	1.1
34	1.2	2.9	1.5	2.1	0.6	0.7	0.8	0.9
35	2.0	2.9	1.5	1.8	0.7	1.0	0.9	1.2
36	1.8	2.5	1.3	1.5	0.5	0.6	0.9	1.2
37	1.6	2.6	1.1	1.2	0.5	0.5	0.7	1.0
38	1.8	3.2	1.5	1.3	0.9	-	0.7	0.9
39	1.2	2.7	0.8	-	0.2	-	-	-
40	-	2.8	-	-	0.2	-	-	-
AL	1.0	1.7	0.8	1.9	0.5	2.5	0.7	1.0
OASPL	2.3	1.3	0.8	0.8	0.5	2.5	2.7	1.4
PNL	1.3	2.1	0.9	2.0	0.3	2.3	1.0	1.2
PNLT	1.4	2.1	0.9	2.0	0.4	2.5	1.0	1.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

***** - TABULATED LEVELS ARE CONTAMINATED BY LOCAL AMBIENT.

Table D.10

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC 1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H (SOFT SURFACE) - 300 M. WEST AUG. 27,1984

HOVER IN GROUND EFFECT

SOUND PRESSURE LEVEL dB re 20 microPascal

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
14	72.1	72.5	72.5	71.7	70.9	70.6	69.1	69.0	71.2	26.5	71.0	1.4
15	57.4	57.3	57.6	58.4	56.8	56.3	54.3	56.3	56.5	17.1	56.4	1.1
16	68.3	68.7	69.5	65.3	68.3	65.9	65.1	68.6	67.7	33.1	67.5	1.7
17	65.6	66.8	68.3	62.8	65.4	64.5	64.0	66.4	65.8	35.6	65.5	1.7
18	62.9	64.5	66.3	64.4	63.2	61.6	61.3	62.7	63.5	37.3	63.3	1.7
19	71.5	64.1	69.2	72.7	69.3	75.8	72.4	72.4	71.9	49.4	70.9	3.5
20	61.9	59.2	63.5	64.4	60.8	65.3	63.6	63.1	63.1	44.0	62.7	2.0
21	58.7	54.1	57.8	60.2	57.3	57.1	56.9	57.8	57.4	41.3	57.1	1.8
22	60.5	59.0	65.8	63.2	59.4	61.4	60.7	59.5	61.8	48.4	61.2	2.3
23	52.4	52.7	60.4	58.8	51.5	59.9	55.4	53.9	56.9	46.0	55.6	3.6
24	46.0	49.9	57.9	51.2	44.9	52.4	49.1	46.9	51.7	43.1	49.4	4.4
25	43.9	42.9	46.8	44.8	40.2	49.7	42.8	42.0	45.1	38.5	44.1	3.0
26	44.4	42.0	44.2	43.5	39.2	49.7	42.1	40.8	44.4	39.6	43.2	3.1
27	44.6	41.4	44.0	42.8	38.6	48.2	42.7	41.9	43.9	40.7	43.0	2.8
28	44.7	41.8	45.2	44.1	40.0	48.3	45.8	44.0	44.8	42.9	44.2	2.5
29	49.3	41.4	45.5	43.4	39.2	47.3	46.8	45.7	45.8	45.9	44.8	3.3
30	48.3	40.5	44.0	42.3	38.9	46.5	48.4	47.3	45.7	45.7	44.5	3.7
31	49.0	40.3	44.7	42.5	38.9	47.1	49.2	48.1	46.3	46.9	45.0	4.0
32	48.5	39.3	43.9	41.1	37.6	46.2	48.3	47.6	45.6	46.6	44.1	4.3
33	47.7	37.8	42.0	39.7	-	44.7	46.4	46.6	44.7	45.9	43.6	3.8
34	45.9	37.0	40.4	38.2	-	43.2	43.9	44.8	42.9	44.2	41.9	3.4
35	44.7	-	37.9	34.4	-	41.4	41.1	42.0	41.3	42.5	40.2	3.6
36	41.8	-	34.8	31.4	-	39.1	36.9	39.0	38.3	39.3	37.2	3.7
37	38.3	-	31.6	-	-	37.0	33.3	35.1	35.7	36.2	35.1	2.7
38	35.4	-	27.4	-	-	35.1	29.1	31.4	32.8	32.7	31.7	3.6
39	31.8	-	23.5	-	-	33.5	24.0	26.8	29.5	28.6	27.9	4.5
40	26.1	-	20.7	-	-	-	18.0	-	22.9	20.4	21.6	4.1
AL	58.8	53.3	58.3	56.9	53.1	59.4	58.4	57.9	57.6	57.6	57.0	2.5
OASPL	74.7	75.8	77.4	74.9	75.4	78.1	75.8	76.4	76.7	-	76.6	0.9
PNL	73.0	67.7	72.7	71.9	68.1	75.5	72.6	72.6	72.6	-	71.8	2.6
PNLT	74.5	68.7	75.8	73.2	69.5	77.5	74.3	74.2	74.1	-	73.2	2.8

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA @ACOUSTIC EMMISION ANGLE SHOWN ABOVE

BAND NO.	0	45	90	135	180	225	270	315
14	0.3	0.3	1.0	0.5	0.7	0.8	0.9	0.5
15	0.9	0.5	1.0	0.4	1.0	1.4	1.1	0.7
16	0.5	0.5	1.0	0.9	0.9	0.8	1.2	0.6
17	0.6	1.0	1.8	3.3	1.4	0.7	1.4	0.6
18	0.7	0.7	2.4	2.1	1.3	1.3	1.4	0.9
19	0.9	1.5	2.2	1.2	0.9	0.9	4.0	0.8
20	0.9	1.2	2.5	1.4	1.0	1.2	2.5	0.7
21	1.2	0.9	2.1	1.7	1.3	1.3	1.0	1.1
22	1.1	1.4	1.7	2.0	1.7	1.9	1.0	1.2
23	1.5	1.0	1.3	2.1	1.6	4.4	0.9	0.8
24	2.8	2.5	1.5	2.0	2.3	3.1	2.5	2.0
25	3.3	2.8	2.4	1.4	3.4	4.0	2.3	1.8
26	3.3	3.0	2.8	1.9	3.4	4.7	2.7	1.8
27	2.3	3.0	2.7	2.0	3.5	3.6	2.5	2.1
28	1.5	2.6	3.0	2.2	2.8	3.2	2.1	1.6
29	2.2	1.7	2.0	1.7	2.7	2.7	2.2	1.1
30	2.2	1.7	1.7	1.1	2.4	2.8	2.6	1.9
31	2.4	1.9	1.9	1.4	2.1	3.2	2.4	2.0
32	2.1	2.0	2.2	1.4	2.9	3.5	2.7	2.5
33	2.5	2.4	2.3	1.7	-	3.6	2.8	3.1
34	2.3	2.7	2.5	1.8	-	3.8	2.8	3.6
35	2.4	-	2.4	1.6	-	4.[illegible]	3.0	3.2
36	2.4	-	2.3	1.5	-	4.4	2.7	2.9
37	3.0	-	2.3	-	-	4.6	2.4	2.6
38	3.2	-	2.3	-	-	5.3	2.1	2.2
39	3.0	-	2.0	-	-	6.2	1.5	2.0
40	4.4	-	2.6	-	-	-	1.3	-
AL	1.3	1.3	1.3	0.9	1.0	1.9	1.7	1.5
OASPL	0.4	0.3	1.1	0.6	0.5	0.6	1.7	0.4
PNL	0.9	1.5	1.4	0.7	1.1	1.7	1.9	1.0
PNLT	1.0	1.6	1.5	0.8	1.3	1.6	2.2	1.1

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

Table D.11

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER — DOT/TSC 1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H — (SOFT SURFACE) - 300 M. WEST — AUG. 27,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	90	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	70.1	68.9	69.5	68.5	67.2	69.2	69.0	68.5	69.1	24.4	69.1	0.5
15	57.8	53.4	54.8	54.8	55.8	53.8	57.0	54.8	55.5	16.1	55.3	1.5
16	67.4	66.5	67.8	66.5	66.6	66.5	66.6	67.0	66.9	32.3	66.9	0.5
17	65.4	64.7	65.3	64.3	63.0	64.3	64.2	64.9	64.6	34.4	64.5	0.8
18	63.8	62.1	62.4	62.2	60.8	61.6	62.2	61.2	62.1	35.9	62.0	0.9
19	67.8	68.3	64.8	64.1	68.0	61.7	68.0	69.3	67.8	45.3	67.2	2.3
20	61.5	59.3	58.3	56.3	58.5	59.8	59.6	60.1	59.4	40.3	59.2	1.5
21	56.7	52.8	51.1	51.9	50.9	50.3	53.6	52.1	52.9	36.8	52.4	2.0
22	63.0	57.0	56.1	58.4	60.9	59.1	58.9	58.5	57.3	45.9	57.0	1.8
23	53.5	50.4	52.1	51.7	52.4	52.1	50.1	49.7	51.7	40.8	51.5	1.3
24	46.9	44.8	46.1	44.5	46.6	44.8	39.6	42.7	45.0	36.4	44.5	2.4
25	40.3	36.6	38.8	37.4	38.4	36.7	36.3	37.3	37.8	31.2	37.6	1.5
26	37.5	33.0	32.2	36.2	36.7	35.1	35.2	36.3	36.1	31.3	36.0	1.4
27	38.5	33.6	37.3	37.1	36.9	35.4	40.8	38.4	37.9	34.7	37.4	2.3
28	41.2	35.1	40.6	40.8	38.6	37.7	44.4	43.8	41.2	39.3	40.3	3.1
29	43.2	37.5	43.3	41.0	38.2	40.2	47.8	44.7	43.2	42.4	42.0	3.4
30	45.6	39.5	45.5	42.9	38.5	40.3	50.3	43.7	44.9	44.9	43.3	3.9
31	46.0	40.0	48.8	43.4	38.6	40.5	51.7	45.2	46.0	46.6	44.0	4.3
32	45.0	39.2	47.6	43.4	38.3	40.3	51.4	45.2	45.9	46.9	43.8	4.5
33	44.3	37.4	47.2	42.3	38.2	39.2	50.5	43.6	45.0	46.2	43.8	4.6
34	43.0	-	46.6	42.0	-	37.8	48.6	42.8	43.7	46.0	43.5	4.8
35	41.2	-	44.6	40.3	-	36.2	45.6	40.3	42.4	43.6	41.4	3.4
36	39.4	-	42.0	37.3	-	32.4	42.1	37.3	39.5	40.5	38.4	3.6
37	36.2	-	38.5	33.8	-	28.4	38.2	32.8	35.8	38.3	34.9	3.8
38	35.4	-	35.0	28.4	-	24.9	34.3	31.3	33.0	32.9	31.7	4.1
39	29.7	-	29.7	23.4	-	-	28.3	26.7	28.1	27.0	27.6	2.6
40	-	-	21.2	-	-	-	-	20.1	20.7	18.2	20.6	0.8
AL	56.5	51.8	56.9	53.8	52.9	53.2	59.7	55.4	55.9	55.9	55.0	2.6
OASPL	75.5	73.7	74.1	73.1	74.0	74.6	73.8	74.4	74.2	-	74.1	0.7
PNL	70.8	69.4	70.6	67.3	67.0	68.1	72.1	69.6	69.5	-	69.0	2.1
PNLT	71.9	67.5	71.9	68.4	68.6	69.6	73.0	71.0	70.7	-	70.2	2.0

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

BAND NO.	0	45	90	135	180	225	270	315
14	0.4	0.4	0.3	0.6	0.4	0.2	0.8	0.2
15	0.9	0.7	0.4	0.8	0.9	0.2	1.8	0.6
16	0.6	0.6	0.2	0.6	0.6	0.3	0.8	0.3
17	0.8	0.7	0.3	0.5	0.7	0.5	0.8	0.5
18	1.1	0.7	0.4	0.4	0.8	0.5	1.3	0.5
19	1.2	0.8	1.3	1.5	0.9	0.7	2.3	0.7
20	1.4	0.8	0.9	0.9	1.0	0.6	1.6	0.6
21	2.2	1.3	1.0	0.9	1.7	1.6	1.5	2.1
22	1.1	0.7	1.6	1.5	1.0	1.3	1.7	2.3
23	1.1	0.9	1.1	2.3	1.2	1.3	1.5	0.7
24	1.4	1.8	1.4	2.3	2.1	2.4	1.8	1.6
25	2.0	2.0	1.5	2.3	3.0	2.2	3.0	2.4
26	1.9	2.0	2.6	2.7	3.2	2.6	3.4	1.7
27	2.7	2.3	1.9	2.8	3.1	2.3	5.3	2.3
28	2.4	2.1	2.1	2.6	2.9	2.3	4.3	2.8
29	3.1	1.5	2.4	2.4	2.6	2.7	4.8	2.6
30	3.8	2.4	3.1	2.3	2.7	2.1	5.1	2.2
31	3.9	2.7	3.6	2.7	2.5	1.7	4.9	2.8
32	3.9	2.8	3.2	2.9	2.8	1.4	4.4	2.9
33	4.3	3.1	3.0	2.7	3.3	1.0	4.0	2.2
34	4.3	-	3.0	2.2	-	0.9	4.0	1.8
35	4.3	-	2.8	2.6	-	0.6	3.0	1.4
36	4.3	-	2.5	2.5	-	0.6	3.1	1.3
37	4.2	-	2.3	2.3	-	0.7	2.6	1.8
38	4.0	-	1.9	2.4	-	0.5	2.3	1.4
39	3.9	-	1.8	1.8	-	-	2.3	1.3
40	-	-	1.5	-	-	-	-	0.7
AL	2.4	1.3	2.1	1.4	1.4	0.5	3.6	1.6
OASPL	0.7	0.3	0.2	0.6	0.5	0.3	1.0	0.3
PNL	2.1	1.3	1.9	1.2	1.5	0.7	3.0	1.1
PNLT	2.1	1.3	1.9	1.2	1.5	0.7	3.0	1.2

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.12

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H (SOFT SURFACE) - 300 M. WEST AUG. 27,1984

GROUND IDLE *****

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	58.5	49.1	47.2	52.9	53.9	52.7	55.0	59.0	55.1	10.4	53.5	4.1
15	54.7	44.8	45.7	50.0	49.7	48.8	50.8	54.9	51.2	11.8	49.9	3.7
16	51.8	44.9	44.6	49.4	48.5	48.0	47.8	51.8	49.1	14.5	48.3	2.7
17	52.1	47.5	47.9	49.6	49.0	51.2	50.1	52.0	50.2	20.0	49.9	1.8
18	47.4	43.5	43.1	47.3	44.7	45.0	47.1	48.8	46.3	20.1	45.9	2.1
19	49.6	47.1	48.1	49.9	48.4	49.3	51.0	50.2	49.4	26.9	49.2	1.3
20	50.3	56.3	50.8	49.7	46.7	49.0	50.8	48.2	51.2	32.1	50.2	2.8
21	47.3	58.6	47.6	46.2	44.2	45.5	47.7	46.7	51.2	35.1	48.0	4.5
22	44.5	45.5	47.0	46.3	44.3	46.5	46.6	45.5	45.9	32.5	45.8	1.0
23	45.1	47.2	46.8	47.5	46.4	45.3	43.8	43.5	45.9	35.0	45.7	1.5
24	38.9	48.6	40.3	44.2	40.7	41.0	38.0	41.4	43.1	34.5	41.6	3.4
25	35.4	38.9	32.0	41.0	31.2	37.6	33.6	40.1	37.5	30.9	36.2	3.7
26	32.3	36.2	28.7	34.5	28.2	32.6	29.9	34.6	32.9	28.1	32.1	2.9
27	31.9	39.2	29.1	34.0	30.3	32.9	31.6	34.1	34.0	30.8	32.9	3.1
28	32.2	37.5	29.6	32.2	31.6	31.9	32.3	32.3	33.1	31.2	32.4	2.2
29	31.8	33.4	30.1	30.6	31.0	31.8	36.9	33.4	32.9	32.1	32.4	2.2
30	30.6	32.3	30.3	33.1	30.1	32.0	40.0	37.4	34.8	34.8	33.2	3.6
31	29.6	31.0	29.0	30.5	28.2	31.1	40.2	37.1	34.3	34.9	32.1	4.3
32	30.5	33.1	28.8	30.6	27.3	31.1	40.5	38.0	34.8	35.8	32.5	4.5
33	30.3	32.5	29.8	30.1	27.7	30.8	41.9	36.6	35.2	36.4	32.5	4.6
34	30.5	31.3	31.3	30.2	30.7	33.4	42.2	37.9	35.9	37.2	33.4	4.3
35	31.0	34.8	31.6	30.9	27.0	31.8	40.7	40.1	35.9	37.1	33.5	4.8
36	31.6	38.2	31.8	30.4	26.6	29.8	37.3	41.9	36.1	37.1	33.4	5.1
37	28.7	33.5	29.7	27.9	24.5	27.2	32.5	36.3	31.5	32.0	30.0	3.8
38	27.3	34.1	28.7	26.5	21.9	26.2	31.4	36.4	31.2	31.1	29.1	4.7
39	21.5	29.2	23.3	21.7	19.2	22.0	25.2	31.0	26.0	24.9	24.1	4.1
40	19.4	28.6	19.5	19.5	17.9	20.7	22.4	28.1	24.0	21.5	22.0	4.1
AL	43.9	49.0	44.0	45.0	42.5	44.4	50.8	49.7	47.2	47.2	46.2	3.2
OASPL	62.3	62.1	57.5	59.6	58.8	59.0	60.5	62.7	60.7	-	60.3	1.9
PNL	57.1	62.8	57.1	57.6	54.7	57.6	64.1	64.4	61.1	-	59.4	3.7
PNLT	57.7	64.3	57.7	58.4	55.8	58.1	64.4	65.6	61.6	-	60.2	3.8

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	3.7	2.3	2.4	2.4	5.2	1.7	1.1	1.8
15	3.1	1.6	1.5	2.0	3.8	1.4	0.9	1.7
16	2.9	1.9	1.2	1.9	3.7	1.2	1.1	1.8
17	1.8	1.8	1.9	1.7	1.8	0.7	1.7	0.9
18	2.1	1.1	0.7	1.2	2.2	1.2	1.0	1.4
19	2.0	0.5	1.1	1.0	1.3	0.8	0.8	1.3
20	2.2	4.6	1.4	1.0	1.2	1.0	1.5	0.6
21	1.2	3.7	0.6	0.6	1.0	0.8	1.3	0.7
22	0.8	0.8	0.8	0.7	0.8	1.6	0.7	0.7
23	1.5	2.2	0.9	1.0	0.8	0.7	1.4	0.6
24	0.8	4.1	1.5	2.1	1.4	1.5	2.0	2.3
25	1.8	3.5	1.1	2.5	1.5	1.7	1.6	1.7
26	1.8	2.7	0.8	2.1	0.8	1.8	1.2	1.0
27	1.6	3.6	1.0	2.3	0.6	0.9	1.9	2.1
28	1.8	3.3	1.1	1.4	0.9	1.7	2.7	0.8
29	1.6	2.7	1.1	1.3	0.7	1.7	4.2	0.9
30	1.3	2.4	1.0	1.7	1.2	2.2	5.1	1.6
31	1.0	1.9	0.9	1.6	1.0	2.1	5.0	1.8
32	1.5	3.0	1.2	2.0	1.8	2.6	4.7	1.3
33	1.3	2.3	1.4	2.3	2.5	3.0	4.9	2.1
34	1.9	1.5	1.5	2.2	3.3	3.4	4.5	2.2
35	1.2	1.9	1.3	2.2	2.8	3.1	4.2	1.5
36	1.1	2.1	1.1	2.0	2.5	2.4	3.7	1.7
37	0.9	1.7	0.9	1.8	2.4	2.0	3.0	1.4
38	1.1	1.8	1.0	1.9	2.1	2.2	3.1	0.7
39	0.9	1.7	0.7	1.2	0.9	2.1	2.3	0.8
40	1.4	2.3	0.8	1.0	0.6	2.2	1.7	1.1
AL	0.7	1.4	0.5	1.1	0.9	1.3	3.7	1.1
OASPL	2.6	2.4	0.7	0.9	2.7	0.6	0.8	1.2
PNL	0.8	1.4	0.6	1.3	1.4	1.8	3.3	1.1
PNLT	0.9	1.6	0.7	1.5	1.8	1.8	3.3	1.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

***** - TABULATED LEVELS ARE CONTAMINATED BY LOCAL AMBIENT.

Table D.13

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 29,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	75.1	75.4	76.6	76.5	77.1	74.6	72.9	74.1	75.5	30.8	75.3	1.4
15	59.8	59.8	60.5	60.0	62.6	59.8	59.7	59.8	60.4	21.0	60.2	1.0
16	70.3	72.0	73.5	70.7	76.0	69.8	70.7	72.5	72.4	37.8	71.9	2.1
17	67.0	70.4	71.3	70.7	73.4	69.9	69.4	70.7	70.7	40.5	70.3	1.8
18	64.2	67.6	69.0	71.2	70.5	66.6	67.2	66.4	68.4	42.2	67.8	2.3
19	69.6	70.5	70.6	75.0	76.5	76.6	68.6	73.4	73.6	51.1	72.6	3.2
20	62.2	64.4	66.3	70.9	71.3	68.2	63.6	66.4	67.8	48.7	66.7	3.3
21	59.3	61.3	63.0	70.9	72.4	65.1	60.5	63.0	67.0	50.9	64.4	4.8
22	62.9	67.0	72.6	74.2	78.1	71.9	65.3	67.1	72.4	59.0	69.9	5.1
23	62.6	63.6	68.2	74.6	77.8	69.6	65.7	67.1	71.7	60.8	68.6	5.3
24	63.6	66.7	73.7	77.1	80.8	72.6	66.0	68.7	74.6	66.0	71.1	5.9
25	64.0	63.7	72.1	78.2	81.1	69.5	64.7	67.9	74.7	68.1	70.1	6.6
26	63.8	63.0	69.9	77.7	82.0	69.3	64.4	67.4	74.9	70.1	69.7	6.9
27	64.7	63.7	68.4	77.3	82.7	70.2	64.7	67.1	75.3	72.1	69.8	6.8
28	64.7	63.1	66.9	75.5	81.0	70.8	64.2	66.8	73.8	71.9	69.1	6.7
29	64.9	62.8	66.1	72.6	70.4	69.1	64.2	65.7	68.2	67.4	67.0	3.4
30	61.0	60.1	64.6	69.8	66.7	65.8	60.7	63.5	65.2	65.2	64.0	3.4
31	59.4	58.9	63.2	67.6	64.4	64.8	58.4	62.5	63.5	64.1	62.4	3.3
32	56.6	56.2	60.1	64.0	61.0	63.1	55.8	60.3	60.6	61.6	59.6	3.1
33	54.5	54.3	56.7	61.2	58.6	59.9	53.1	57.8	57.8	59.0	57.0	2.9
34	51.7	52.8	53.7	58.8	56.5	56.3	50.5	55.6	55.3	56.6	54.5	2.8
35	47.6	51.4	51.4	56.0	54.5	53.3	47.3	53.1	52.7	53.9	51.8	3.1
36	43.4	48.4	48.2	53.0	50.5	51.1	43.7	49.9	49.5	50.5	48.5	3.4
37	42.9	46.3	45.6	49.7	48.2	49.6	41.6	48.0	47.3	47.8	46.5	3.0
38	42.4	45.1	43.9	47.6	45.3	47.2	40.4	47.3	45.5	45.4	44.9	2.6
39	-	42.1	-	-	-	43.6	-	-	42.9	41.8	42.9	1.1
40	-	39.1	-	-	-	39.4	-	-	39.3	36.8	39.2	0.2
AL	70.6	69.9	74.7	81.2	84.7	76.1	70.4	73.3	78.4	78.4	75.1	5.4
OASPL	79.4	80.4	83.1	87.0	90.3	83.2	79.3	81.4	84.8	-	83.0	3.9
PNL	81.1	81.7	86.3	92.0	94.7	87.2	81.2	84.6	89.2	-	86.1	5.1
PNLT	82.1	82.4	87.5	92.7	95.7	88.7	81.7	85.8	90.1	-	87.1	5.2

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.3	0.2	0.4	0.4	0.3	0.3	0.5	0.4
15	0.0	0.0	0.4	0.2	0.5	0.1	0.1	0.1
16	0.6	0.4	0.6	1.3	0.5	0.8	0.5	0.3
17	0.7	0.5	0.7	1.9	0.7	0.7	0.6	0.5
18	0.7	0.6	0.8	2.1	0.9	1.1	0.7	0.7
19	0.7	0.5	2.4	2.0	0.5	1.1	1.9	1.1
20	0.6	0.7	1.3	2.5	0.9	1.1	1.0	0.5
21	1.7	0.9	1.1	2.3	1.3	1.1	1.3	1.0
22	2.2	1.4	1.6	1.5	1.0	1.4	1.0	1.5
23	2.4	0.8	1.1	2.5	1.3	1.1	1.0	1.5
24	2.5	1.4	1.0	2.7	1.4	1.5	1.3	1.8
25	2.5	1.7	1.7	3.2	1.4	2.3	1.4	1.8
26	3.2	1.4	1.7	3.7	1.5	2.1	1.8	2.2
27	3.3	1.8	1.6	3.5	1.5	2.1	1.9	2.3
28	3.2	1.7	1.7	3.4	1.4	2.2	2.1	2.4
29	2.3	1.5	1.8	3.6	3.3	2.6	2.5	2.6
30	2.4	1.4	2.0	3.5	3.5	2.6	2.2	2.2
31	1.9	1.8	2.3	3.5	3.7	2.1	1.8	2.1
32	1.6	1.4	1.9	3.4	3.5	2.0	2.4	2.0
33	1.7	1.7	1.6	3.4	3.6	1.6	2.0	1.8
34	1.8	1.7	1.4	3.3	3.4	1.3	2.0	1.7
35	2.0	1.6	1.3	2.9	3.5	1.4	1.6	2.1
36	1.9	1.6	1.1	2.8	3.6	1.9	1.4	2.2
37	1.5	1.6	1.3	2.6	3.2	1.9	1.9	2.7
38	1.9	1.8	1.4	2.7	3.3	1.7	2.1	2.7
39	-	2.6	-	-	-	1.7	-	-
40	-	2.3	-	-	-	1.5	-	-
AL	2.3	1.2	1.3	3.2	1.1	1.7	1.6	2.0
OASPL	0.4	0.2	0.5	2.2	0.9	0.6	0.5	0.7
PNL	2.0	1.1	1.0	2.9	1.0	1.3	1.3	1.8
PNLT	2.0	1.1	1.0	2.8	1.0	1.3	1.4	2.0

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.14

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 29,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	90	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	72.9	72.5	73.0	72.9	72.9	72.0	72.2	72.2	72.6	27.9	72.6	0.4
15	59.4	59.2	59.5	59.5	59.5	59.6	59.3	59.3	59.4	20.0	59.4	0.1
16	70.4	70.1	70.1	70.4	69.8	68.8	69.3	70.2	69.9	35.3	69.9	0.6
17	68.1	67.7	68.2	68.9	67.0	67.6	66.5	67.7	67.8	37.6	67.7	0.7
18	64.5	65.3	65.6	66.8	65.4	63.6	63.2	63.9	64.9	38.7	64.8	1.2
19	71.2	70.5	68.3	71.7	72.5	70.7	63.3	71.8	70.6	48.1	70.0	3.0
20	61.5	61.9	61.9	64.1	63.1	61.6	59.3	62.6	62.2	43.1	62.0	1.4
21	56.5	56.0	58.1	61.8	59.5	56.9	56.5	59.3	58.5	42.4	58.1	2.0
22	68.0	65.5	67.5	69.5	72.3	64.9	63.2	65.9	68.0	54.6	67.1	2.9
23	62.1	62.6	64.0	66.6	65.6	63.2	63.0	63.0	64.0	53.1	63.8	1.6
24	65.2	66.2	70.7	69.4	71.2	66.9	66.6	66.0	68.3	59.7	67.8	2.3
25	63.4	64.1	68.0	69.6	68.3	64.1	66.2	63.7	66.5	59.9	65.9	2.4
26	62.1	62.9	66.8	68.5	67.1	64.2	65.2	62.8	65.5	60.7	64.9	2.3
27	61.6	62.7	66.5	68.4	65.9	63.9	65.4	62.0	65.1	61.9	64.5	2.4
28	60.9	62.0	65.8	68.0	64.9	64.0	65.1	62.3	64.7	62.8	64.1	2.3
29	60.8	61.5	64.4	66.3	63.8	63.4	65.3	62.6	63.9	63.1	63.5	1.9
30	60.2	60.5	63.8	65.9	63.8	62.9	65.3	62.2	63.5	63.5	63.1	2.1
31	58.6	59.0	61.6	64.7	62.6	61.9	64.3	60.9	62.2	62.8	61.7	2.2
32	55.8	56.9	58.9	62.2	59.4	59.6	62.7	58.6	59.8	60.8	59.3	2.4
33	53.4	54.0	55.7	60.0	57.0	57.3	59.6	56.5	57.2	58.4	56.7	2.4
34	51.5	52.2	53.2	57.9	55.0	55.4	56.4	52.6	54.8	56.1	54.3	2.2
35	49.3	49.9	49.2	54.2	50.4	51.4	51.0	49.1	50.9	52.1	50.6	1.7
36	45.8	47.3	44.6	48.5	47.2	45.6	45.0	47.7	46.7	47.7	46.5	1.4
37	42.8	43.4	41.2	47.1	47.7	42.3	44.4	47.0	45.1	45.6	44.5	2.5
38	44.2	45.0	39.9	45.2	45.4	40.3	44.4	48.4	44.8	44.7	44.1	2.8
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	68.8	69.4	72.5	74.7	72.8	71.3	73.1	70.3	72.0	72.0	71.6	2.0
OASPL	78.9	78.7	79.9	81.1	80.8	78.7	78.5	78.9	79.6	-	79.4	1.0
PNL	80.2	80.9	83.4	85.4	84.5	82.0	83.6	81.8	83.0	-	82.7	1.8
PNLT	81.6	82.0	84.5	86.4	86.1	83.4	84.2	83.3	84.1	-	83.9	1.7

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.4	0.3	0.3	0.4	0.3	0.5	1.4	0.8
15	0.1	0.3	0.0	0.1	0.5	0.6	0.2	0.3
16	0.5	0.5	0.5	0.6	0.5	0.4	1.3	0.7
17	0.4	0.5	0.4	0.7	0.6	0.7	0.8	0.6
18	0.7	0.5	0.8	0.9	0.6	0.8	0.7	0.8
19	0.6	0.5	1.5	1.4	0.3	0.7	1.2	0.7
20	0.7	0.5	1.1	0.9	0.5	0.9	0.8	0.5
21	1.3	1.2	1.3	1.2	1.3	1.5	0.9	2.0
22	1.5	1.1	2.0	2.1	1.0	1.7	1.5	1.2
23	1.4	0.6	0.9	1.3	0.7	1.2	0.8	1.1
24	1.5	0.9	1.1	1.3	1.0	0.8	1.2	1.4
25	1.6	0.6	1.2	1.5	0.9	0.9	1.5	1.5
26	1.7	0.8	1.8	1.9	0.9	1.1	1.5	1.9
27	1.2	0.6	1.9	2.1	1.0	1.0	1.5	2.0
28	1.5	0.6	1.8	1.6	1.1	1.0	1.7	2.0
29	1.8	0.8	1.7	1.9	1.1	1.3	1.1	2.4
30	1.8	0.9	1.5	2.0	1.2	1.5	1.3	2.3
31	1.9	1.2	1.7	2.2	1.3	1.4	1.4	2.2
32	2.3	1.6	2.0	2.2	1.3	1.1	1.6	1.8
33	2.8	1.8	2.3	2.3	1.2	1.2	1.9	2.1
34	3.2	1.9	2.4	2.3	1.7	1.2	1.9	2.2
35	3.4	2.0	2.3	2.1	2.3	1.5	1.6	3.2
36	3.3	1.9	1.9	2.8	2.0	1.7	2.2	4.3
37	3.0	2.0	1.9	4.0	1.9	1.8	3.3	4.8
38	2.8	2.3	2.0	4.1	1.6	1.8	3.6	5.0
39	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	1.6	0.7	1.3	1.7	0.8	1.0	1.3	2.0
OASPL	0.6	0.3	0.5	0.6	0.4	0.4	1.1	0.7
PNL	1.7	0.7	1.0	1.6	0.7	0.9	1.4	2.0
PNLT	1.7	0.7	1.0	1.5	0.8	0.9	1.5	2.0

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.15

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 1H (HARD SURFACE) - 150 M. EAST AUG. 29,1984

GROUND IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	49.6	-	52.7	51.2	48.5	-	49.9	48.9	50.4	5.7	50.1	1.6
15	46.6	-	52.5	48.5	45.6	-	47.0	45.4	48.4	9.0	47.6	2.6
16	46.0	-	49.8	48.8	47.5	-	46.6	46.6	47.8	13.2	47.5	1.5
17	51.7	-	53.3	51.7	52.8	-	48.4	49.3	51.5	21.3	51.2	1.9
18	45.1	-	49.7	47.6	54.0	-	47.5	46.9	49.5	23.3	48.5	3.1
19	51.0	-	52.2	51.9	52.3	-	51.8	51.1	51.7	29.2	51.7	0.5
20	50.0	-	59.3	52.9	51.0	-	52.3	51.5	54.2	35.1	52.8	3.3
21	46.4	-	57.4	51.2	48.5	-	49.0	48.6	52.0	35.9	50.2	3.9
22	50.1	-	55.8	54.0	52.3	-	54.8	54.3	53.9	40.5	53.5	2.0
23	56.1	-	61.1	59.9	59.4	-	59.8	58.9	59.4	48.5	59.2	1.7
24	55.2	-	59.4	59.2	57.3	-	58.6	56.1	57.9	49.3	57.6	1.7
25	53.1	-	57.5	56.4	52.7	-	56.5	55.1	55.6	49.0	55.2	2.0
26	47.3	-	54.1	54.5	52.4	-	53.0	52.6	52.8	48.0	52.3	2.6
27	51.3	-	54.6	56.0	53.9	-	57.3	55.5	55.1	51.9	54.8	2.1
28	48.2	-	53.1	55.0	53.7	-	54.0	51.7	53.1	51.2	52.6	2.4
29	50.4	-	52.9	51.5	49.0	-	54.5	51.2	51.9	51.1	51.6	1.9
30	52.6	-	52.8	53.0	50.9	-	54.8	54.3	53.2	53.2	53.1	1.4
31	51.0	-	50.0	48.9	46.9	-	52.9	52.6	50.8	51.4	50.4	2.3
32	51.8	-	49.2	48.8	44.6	-	52.4	52.7	50.7	51.7	49.9	3.1
33	51.5	-	49.1	48.0	43.5	-	51.5	49.7	49.6	50.8	48.9	3.0
34	47.4	-	47.6	46.4	41.7	-	48.4	45.9	46.7	48.0	46.2	2.4
35	45.9	-	46.9	45.0	39.7	-	45.0	46.0	45.2	46.4	44.7	2.6
36	46.8	-	44.9	44.3	38.5	-	47.3	50.9	46.8	47.8	45.4	4.1
37	46.2	-	43.1	43.4	39.0	-	46.2	48.3	45.3	45.8	44.4	3.3
38	49.8	-	45.6	44.4	38.7	-	48.9	51.0	47.9	47.8	46.4	4.5
39	-	-	-	-	-	-	-	48.7	48.7	47.6	48.7	-
40	-	-	-	-	-	-	-	51.3	51.3	48.8	51.3	-
AL	61.6	-	62.3	62.0	59.5	-	63.7	63.2	62.4	62.4	62.0	1.5
OASPL	64.8	-	68.5	67.1	65.7	-	67.5	66.6	67.0	-	66.7	1.3
PNL	74.5	-	74.8	73.6	70.9	-	75.8	76.4	74.9	-	74.3	1.9
PNLT	75.7	-	75.4	74.6	71.9	-	77.1	77.7	75.7	-	75.4	2.1

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	2.2	0.0	1.0	1.1	1.9	0.0	1.7	1.2
15	1.9	0.0	1.3	1.9	1.3	0.0	1.4	1.0
16	1.4	0.0	1.3	1.4	0.6	0.0	1.2	1.0
17	2.2	0.0	1.8	1.3	0.4	0.0	0.9	1.3
18	1.0	0.0	1.7	1.0	1.4	0.0	0.9	1.0
19	1.4	0.0	0.5	0.5	0.8	0.0	0.4	0.5
20	1.4	0.0	2.7	1.9	0.7	0.0	0.8	0.6
21	1.5	0.0	3.3	1.2	0.9	0.0	0.5	0.5
22	2.4	0.0	0.8	0.9	0.8	0.0	0.5	0.7
23	2.5	0.0	0.7	1.2	0.9	0.0	0.6	0.7
24	2.0	0.0	0.7	1.1	0.8	0.0	0.6	0.6
25	1.7	0.0	1.1	1.3	0.9	0.0	0.6	0.7
26	1.5	0.0	1.1	1.5	0.7	0.0	0.5	1.0
27	1.9	0.0	1.1	2.2	1.5	0.0	0.7	0.8
28	1.6	0.0	1.6	2.3	1.8	0.0	0.7	1.0
29	1.0	0.0	2.3	1.5	2.1	0.0	0.7	0.9
30	1.2	0.0	2.0	2.0	2.0	0.0	0.9	0.7
31	1.1	0.0	2.1	1.7	2.2	0.0	0.9	0.7
32	1.3	0.0	2.2	2.2	2.3	0.0	0.9	1.2
33	1.5	0.0	2.3	2.3	2.6	0.0	1.1	1.5
34	1.7	0.0	2.5	2.5	2.7	0.0	1.7	2.2
35	2.5	0.0	2.5	2.9	2.4	0.0	1.4	2.6
36	3.0	0.0	3.5	3.4	2.7	0.0	4.2	3.9
37	2.9	0.0	4.6	4.3	3.8	0.0	4.0	3.8
38	3.0	0.0	5.2	4.6	4.5	0.0	4.3	3.4
39	-	0.0	-	-	-	0.0	-	3.8
40	-	0.0	-	-	-	0.0	-	3.3
AL	1.4	0.0	1.6	1.5	1.3	0.0	0.8	1.3
OASPL	1.2	0.0	0.9	0.9	0.6	0.0	0.5	0.7
PNL	1.6	0.0	1.9	1.6	1.1	0.0	1.1	2.0
PNLT	1.6	0.0	2.0	1.8	1.1	0.0	1.2	2.1

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

Table D.16

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 29,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	75.8	76.1	75.9	76.1	74.9	73.6	73.9	72.7	75.0	30.3	74.9	1.3
15	60.2	60.3	60.2	60.2	60.2	60.2	60.2	60.2	60.2	20.8	60.2	0.0
16	71.3	72.2	72.6	70.6	72.5	70.1	70.6	71.8	71.6	37.0	71.5	1.0
17	69.3	71.2	72.5	68.1	70.2	69.3	69.3	70.7	70.3	40.1	70.1	1.4
18	66.7	69.8	70.9	68.3	67.0	65.4	66.2	66.8	68.0	41.8	67.6	1.9
19	73.8	69.7	73.1	77.7	74.5	79.9	73.3	75.9	75.7	53.2	74.7	3.1
20	64.9	64.1	67.5	68.7	65.3	69.1	66.1	66.8	66.9	47.8	66.6	1.8
21	60.2	61.1	62.6	66.0	60.1	63.1	61.1	63.2	62.6	46.5	62.2	2.0
22	66.6	65.5	71.4	68.2	65.0	72.0	68.6	66.9	68.7	55.3	68.0	2.6
23	60.0	62.2	65.5	65.1	57.3	65.3	64.3	62.1	63.4	52.5	62.7	2.9
24	55.5	60.5	62.1	59.3	53.3	57.1	57.8	57.7	58.7	50.1	57.9	2.8
25	45.9	48.0	51.7	48.6	44.4	45.8	45.0	47.1	47.7	41.1	47.1	2.4
26	47.1	47.2	48.0	47.8	45.2	49.5	43.0	51.1	47.9	43.1	47.4	2.5
27	50.2	49.9	49.9	50.2	48.1	52.9	47.2	55.4	51.2	48.0	50.5	2.6
28	53.3	53.5	51.5	52.5	51.8	56.1	50.6	59.1	54.5	52.6	53.5	2.8
29	54.1	54.2	52.5	52.3	52.1	57.7	52.9	61.5	56.1	55.3	54.7	3.3
30	56.0	55.2	53.5	53.4	53.6	58.9	55.5	64.4	58.2	58.2	56.3	3.7
31	55.7	55.3	53.9	54.6	53.2	60.3	56.7	64.5	58.6	59.2	56.8	3.8
32	54.3	53.7	52.4	55.1	51.7	60.4	57.7	63.2	57.9	58.9	56.1	4.0
33	53.7	52.2	50.8	54.8	49.9	59.2	57.8	60.9	56.5	57.7	54.9	4.0
34	52.4	51.0	49.2	53.2	49.6	55.7	54.4	57.9	53.9	55.2	52.9	3.0
35	51.7	50.6	48.1	50.6	48.3	49.8	48.2	55.5	51.1	52.3	50.3	2.5
36	49.4	49.2	46.5	48.1	46.0	47.7	43.8	52.1	48.5	49.5	47.8	2.5
37	46.8	47.1	44.4	46.2	44.2	45.3	41.6	49.0	46.1	46.6	45.6	2.2
38	45.8	46.8	42.3	44.3	42.3	43.0	40.0	47.7	44.7	44.6	44.0	2.6
39	43.1	-	-	-	-	-	-	-	43.1	42.0	43.1	-
40	40.6	-	-	-	-	-	-	-	40.6	38.1	40.6	-
AL	64.9	64.5	64.7	65.5	62.7	69.0	66.1	71.7	67.1	67.1	66.1	2.9
OASPL	80.1	80.1	81.3	81.8	80.1	82.6	79.5	80.7	80.9	-	80.8	1.0
PNL	78.6	78.4	79.7	80.6	77.1	82.6	79.4	83.7	80.3	-	80.0	2.2
PNLT	80.0	79.0	80.9	82.1	78.5	84.8	80.6	85.2	81.7	-	81.4	2.5

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.3	0.4	0.3	0.3	0.4	0.3	0.3	0.6
15	0.0	0.1	0.1	0.0	0.0	0.1	0.0	0.1
16	0.5	0.5	0.5	0.6	0.7	0.4	0.4	0.5
17	0.8	0.7	0.5	1.7	1.0	0.6	0.7	0.6
18	0.8	0.6	0.6	2.1	0.8	0.9	1.3	1.0
19	1.0	1.1	1.3	0.4	0.6	0.4	3.6	0.8
20	1.1	1.1	0.9	0.5	1.1	0.5	1.9	1.1
21	0.6	1.5	1.3	1.9	1.3	1.0	1.0	1.1
22	0.8	1.4	1.0	1.4	1.3	0.7	1.1	2.1
23	0.7	0.6	0.9	0.9	1.4	0.7	0.9	1.0
24	1.2	1.0	1.2	0.6	3.9	1.4	0.8	1.3
25	1.7	1.4	1.7	0.9	3.9	1.7	1.4	1.7
26	2.6	1.8	2.5	1.5	4.3	1.7	1.9	3.4
27	3.1	2.1	2.5	2.6	4.0	1.6	1.9	3.5
28	3.2	2.4	2.8	2.3	4.0	2.0	1.7	3.5
29	3.2	2.1	3.0	2.1	4.6	2.3	2.3	4.0
30	3.7	2.5	3.3	1.7	4.8	2.5	2.4	4.5
31	3.2	2.6	3.2	2.1	4.4	3.1	2.2	3.8
32	2.4	2.5	2.7	2.4	4.6	3.0	2.0	3.2
33	2.5	2.5	2.8	2.8	4.0	2.8	2.4	3.0
34	2.1	2.3	2.8	2.6	4.2	1.9	2.7	2.7
35	1.8	2.4	2.5	2.1	4.0	1.4	2.1	2.3
36	1.3	2.7	2.6	1.9	3.6	1.1	1.8	2.4
37	1.0	2.7	2.3	2.1	3.6	1.4	1.5	2.2
38	1.1	3.0	2.3	2.0	3.6	1.5	1.5	2.2
39	1.4	-	-	-	-	-	-	-
40	1.1	-	-	-	-	-	-	-
AL	1.9	1.6	1.5	1.2	3.0	1.7	1.6	3.1
OASPL	0.4	0.4	0.3	0.3	0.5	0.3	1.0	0.6
PNL	1.2	1.3	1.2	0.6	2.1	0.7	1.5	2.2
PNLT	1.2	1.3	1.3	0.5	2.1	0.7	1.6	2.2

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.17

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 29,1984

FLIGHT IDLE

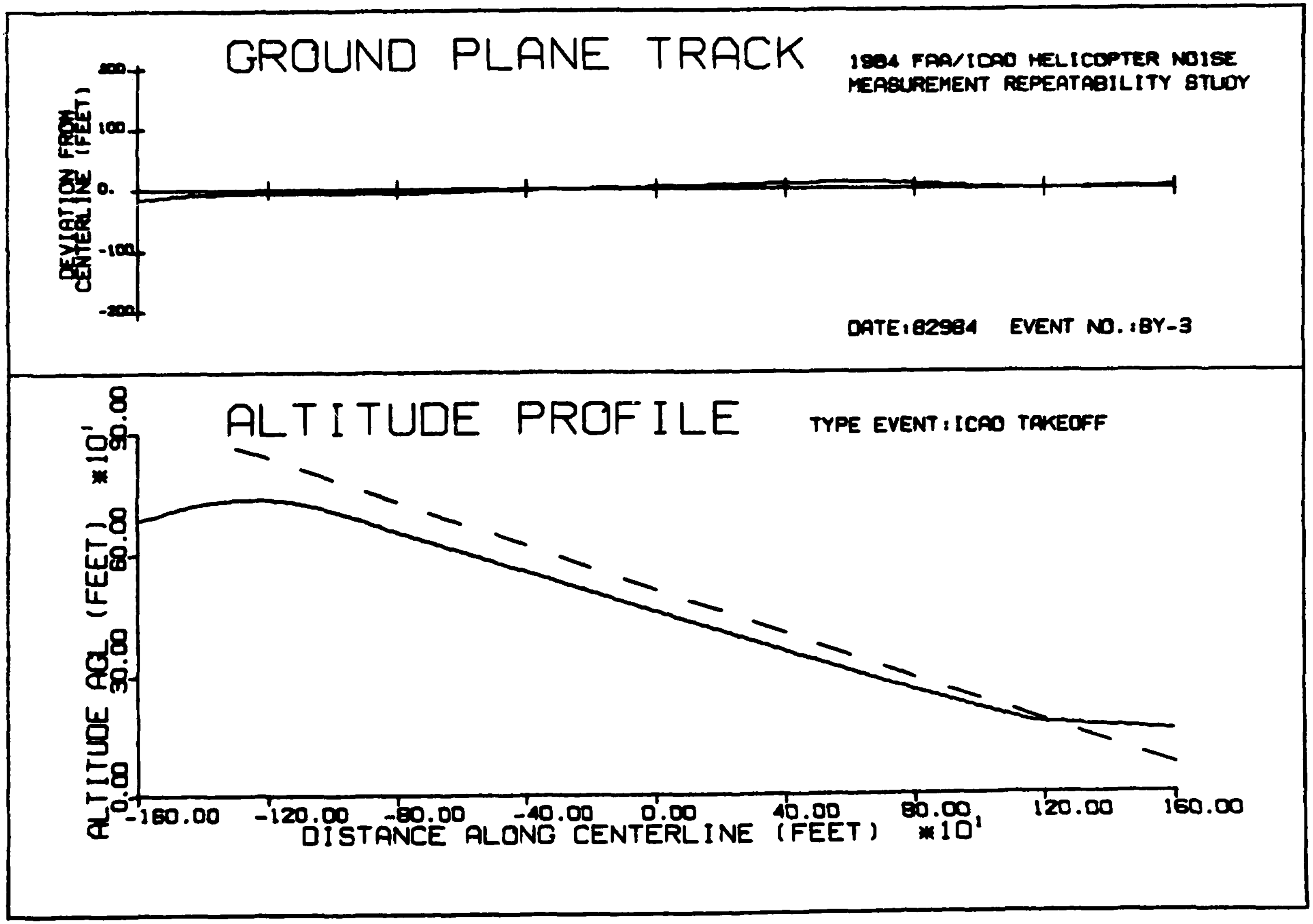
BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES)								AVERAGE LEVEL OVER 360 DEGREES			
	0	45	90	135	180	225	270	315	ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	73.3	73.1	73.5	72.8	72.8	72.5	73.1	72.6	73.0	28.3	73.0	0.3
15	60.4	60.4	60.4	60.3	60.0	59.8	60.4	60.4	60.3	20.9	60.3	0.2
16	70.5	70.7	71.7	70.5	70.0	69.9	70.5	70.2	70.5	35.9	70.5	0.6
17	69.6	69.6	69.8	69.6	68.9	68.4	69.2	69.2	69.3	39.1	69.3	0.5
18	66.9	67.1	67.0	67.3	65.9	65.3	66.2	66.2	66.5	40.3	66.5	0.7
19	73.8	71.8	67.7	73.8	73.4	74.5	69.8	75.1	73.0	50.5	72.5	2.6
20	63.6	62.9	61.0	63.3	63.1	63.6	63.6	64.8	63.3	44.2	63.2	1.1
21	58.3	58.6	57.9	60.5	58.0	56.4	59.6	60.0	58.8	42.7	58.7	1.3
22	68.3	64.1	66.7	66.1	69.6	65.4	66.6	65.7	66.9	53.5	66.6	1.7
23	58.6	57.6	60.9	60.2	60.3	59.3	60.9	58.7	59.7	48.8	59.6	1.2
24	54.4	52.8	57.7	55.9	55.6	56.3	57.5	55.6	56.0	47.4	55.7	1.6
25	44.1	41.9	44.9	43.2	43.4	43.3	45.3	42.1	43.8	37.2	43.6	1.3
26	42.4	40.6	43.8	41.5	42.0	39.7	42.2	42.5	42.0	37.2	41.8	1.3
27	45.5	44.2	47.0	43.8	44.5	42.6	43.2	45.1	44.7	41.5	44.5	1.4
28	47.6	48.4	51.5	47.9	46.9	45.7	45.0	50.6	48.5	46.6	47.9	2.2
29	49.9	50.0	53.2	48.9	46.7	47.0	44.4	52.1	49.8	49.0	49.0	2.9
30	53.8	53.0	55.9	51.7	49.7	49.2	45.4	55.3	52.8	52.8	51.7	3.5
31	55.2	54.1	56.6	52.2	50.5	51.3	44.9	57.1	54.0	54.6	52.7	4.0
32	55.1	53.8	56.3	51.9	50.6	51.4	43.8	57.6	54.0	55.0	52.6	4.3
33	55.7	53.4	55.5	51.8	50.3	49.7	42.2	57.8	53.8	55.0	52.0	4.9
34	55.4	53.5	54.4	51.6	50.6	49.0	41.3	57.5	53.4	54.7	51.7	5.0
35	54.0	53.0	52.5	50.9	50.0	48.3	41.2	56.6	52.4	53.6	50.8	4.6
36	51.0	52.2	50.3	48.6	48.4	46.0	40.0	54.6	50.4	51.4	48.9	4.4
37	49.1	50.3	48.1	46.4	46.5	43.1	38.4	52.0	48.2	48.7	46.7	4.3
38	51.6	53.1	46.3	44.3	43.5	40.8	36.5	53.6	49.3	49.2	46.2	6.2
39	49.0	52.1	-	-	-	-	-	51.4	51.0	49.9	50.8	1.6
40	45.0	48.5	-	-	-	-	-	47.6	47.3	44.8	47.0	1.8
AL	65.5	64.5	65.6	62.9	62.5	61.5	58.8	67.4	64.4	64.4	63.6	2.7
OASPL	79.3	78.5	78.4	79.0	78.9	78.8	78.1	79.5	78.8	-	78.8	0.5
PNL	79.9	79.0	79.1	77.2	77.5	76.3	73.8	81.7	78.8	-	78.1	2.4
PNLT	81.5	80.1	80.3	78.6	79.2	78.0	74.8	83.3	80.1	-	79.5	2.5

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.2	0.2	0.2	0.2	0.1	0.2	0.1	0.2
15	0.1	0.1	0.0	0.1	0.2	0.2	0.1	0.1
16	0.2	0.4	0.2	0.4	0.4	0.4	0.3	0.4
17	0.3	0.3	0.3	0.3	0.6	0.5	0.3	0.4
18	0.4	0.4	0.5	0.4	0.7	0.7	0.6	0.4
19	0.3	0.4	0.9	0.7	0.3	0.8	1.6	1.1
20	0.5	0.5	0.9	0.7	1.1	0.4	1.2	0.6
21	1.2	0.7	0.7	1.1	1.4	1.1	1.1	1.1
22	0.6	0.9	0.6	1.1	0.7	1.6	1.6	0.9
23	0.5	0.6	0.6	0.5	0.6	1.2	0.8	0.6
24	0.8	1.3	0.5	0.9	1.1	1.0	1.0	0.8
25	2.3	0.8	0.8	0.9	1.2	1.2	1.2	0.7
26	0.9	1.5	1.7	1.4	2.4	2.0	2.5	1.0
27	1.3	1.9	2.5	1.3	2.0	2.3	1.7	1.4
28	1.3	2.3	3.0	1.3	1.9	2.1	1.6	1.9
29	1.7	3.1	3.5	1.9	3.0	3.4	1.7	2.2
30	2.0	3.3	4.1	2.7	3.3	3.7	1.7	2.6
31	1.9	3.4	4.6	2.9	3.3	3.2	1.5	2.8
32	1.9	3.9	5.2	2.9	3.5	3.4	1.5	3.1
33	1.8	4.0	5.7	3.1	3.3	3.2	1.4	3.3
34	1.6	4.6	5.9	3.3	3.5	3.4	1.0	3.5
35	1.5	4.9	6.0	3.2	3.7	[illegible]	1.0	3.6
36	1.6	5.1	5.8	3.1	3.5	3.3	1.1	3.5
37	1.9	5.1	5.8	3.2	3.2	2.9	1.5	3.0
38	2.5	5.4	5.7	3.0	2.8	3.0	1.9	3.3
39	2.5	5.7	-	-	-	-	-	3.0
40	2.2	5.3	-	-	-	-	-	2.5
AL	1.2	3.3	3.6	1.7	1.6	2.2	0.8	2.6
OASPL	0.2	0.2	0.3	0.3	0.2	0.3	0.4	0.4
PNL	1.0	3.1	3.3	1.4	1.2	1.6	1.0	2.3
PNLT	1.1	3.1	3.4	1.4	1.2	1.7	1.1	2.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

FIGURE E.6



GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82984
EVENT NO.:BY-3
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10^1
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10^1

FIGURE E.5

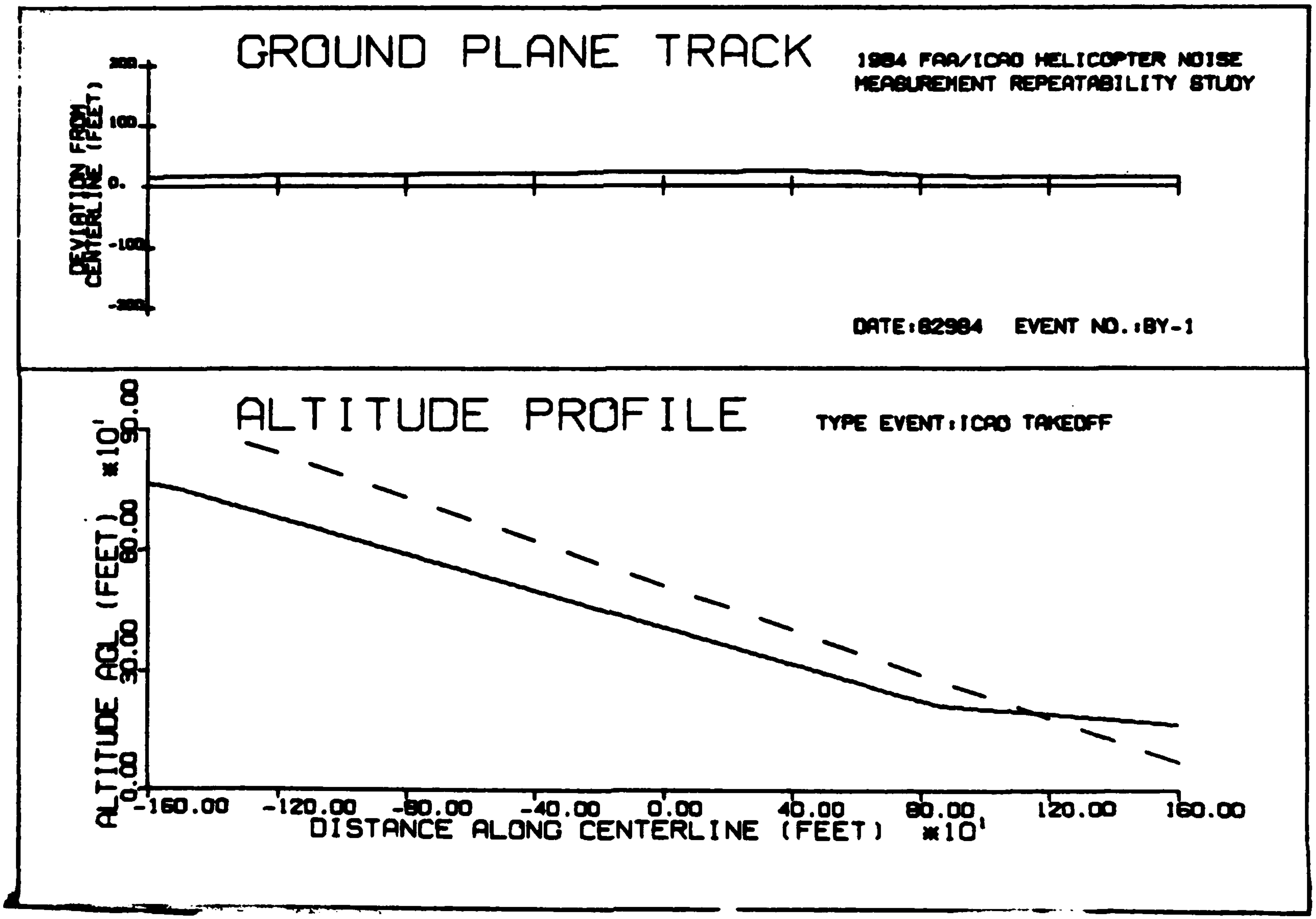
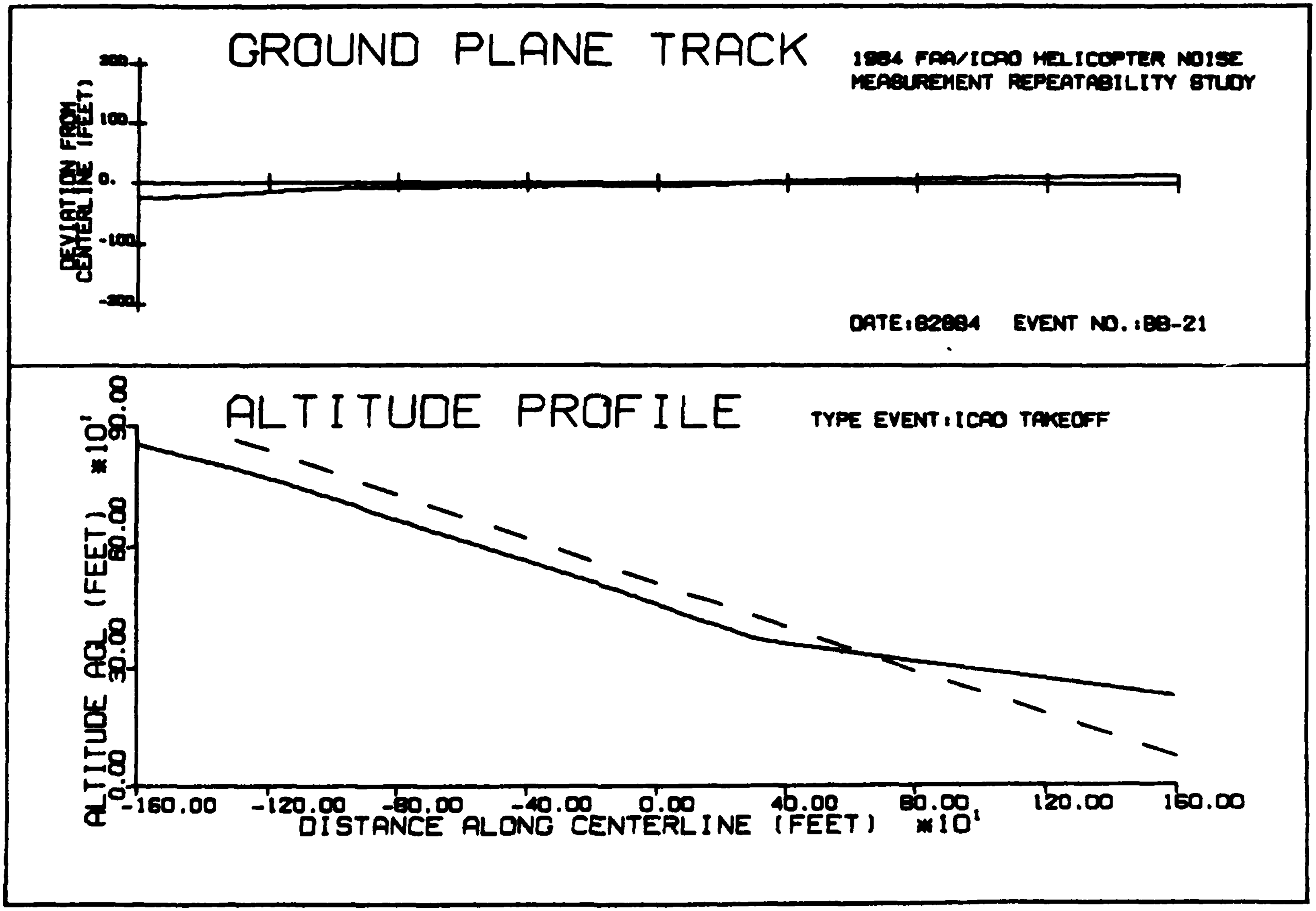

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82984 EVENT NO.:BY-1
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
0.00
30.00
60.00
90.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.4



GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82884 EVENT NO.:BB-21
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.3

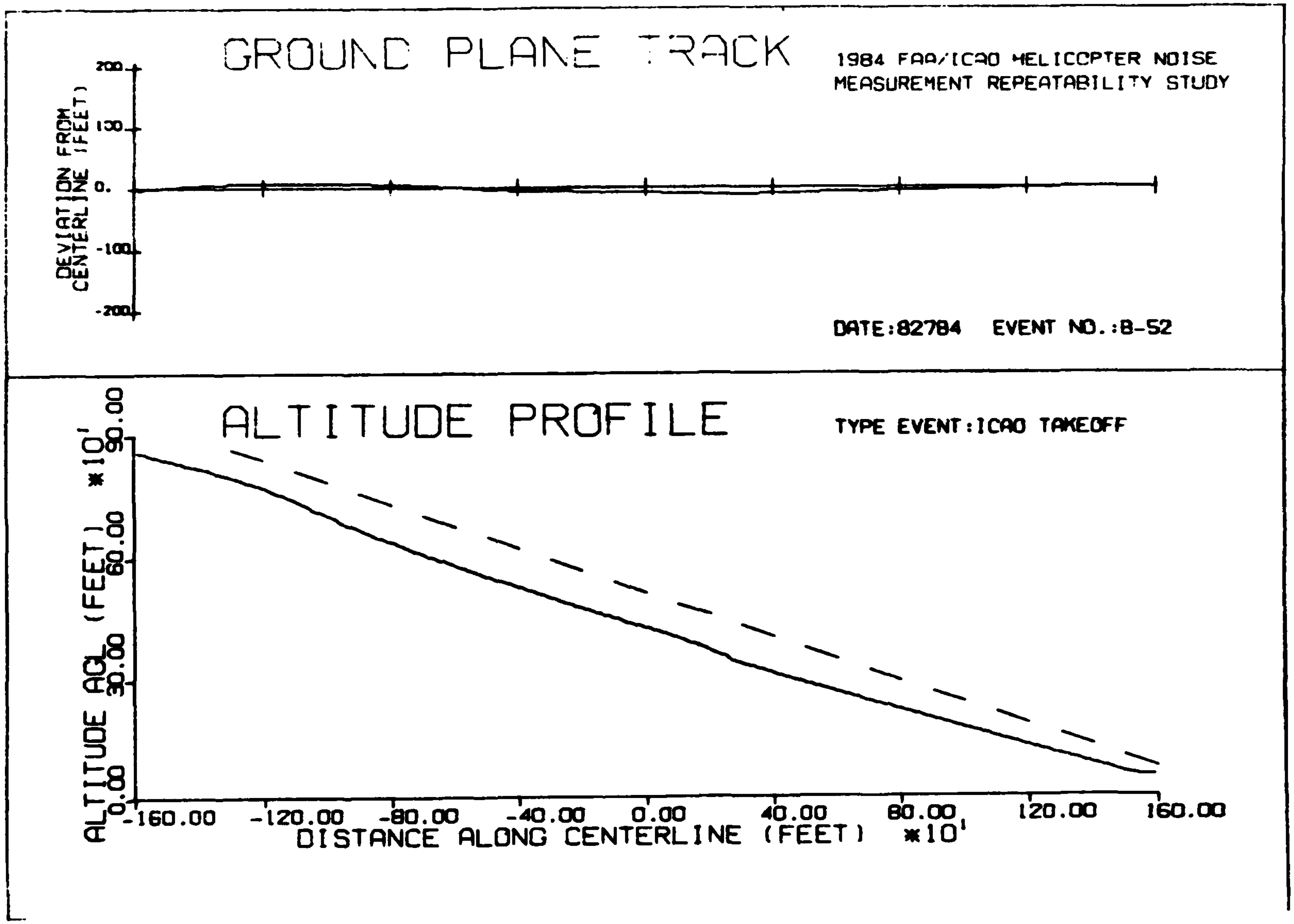

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82784 EVENT NO.:B-52
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.2

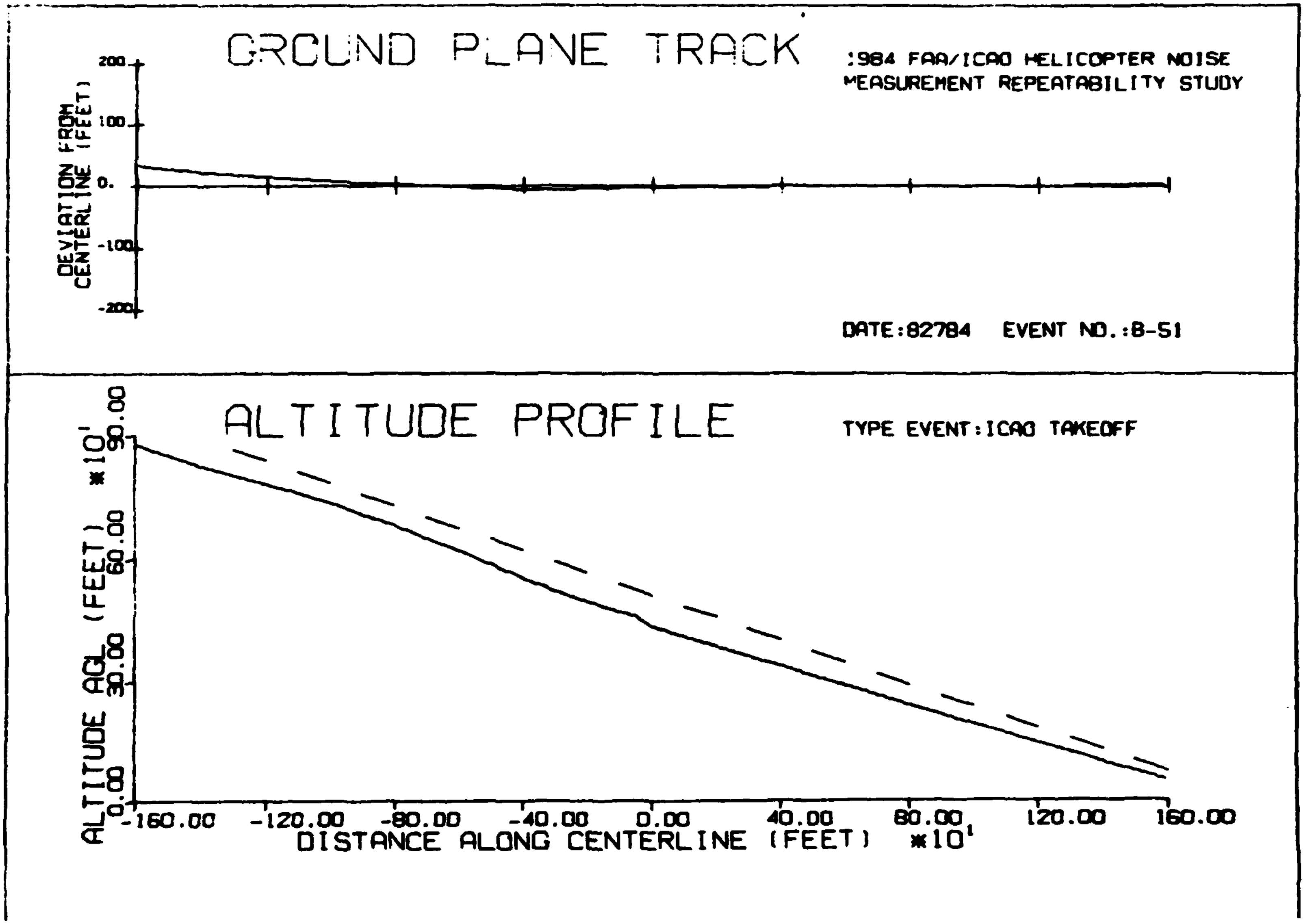
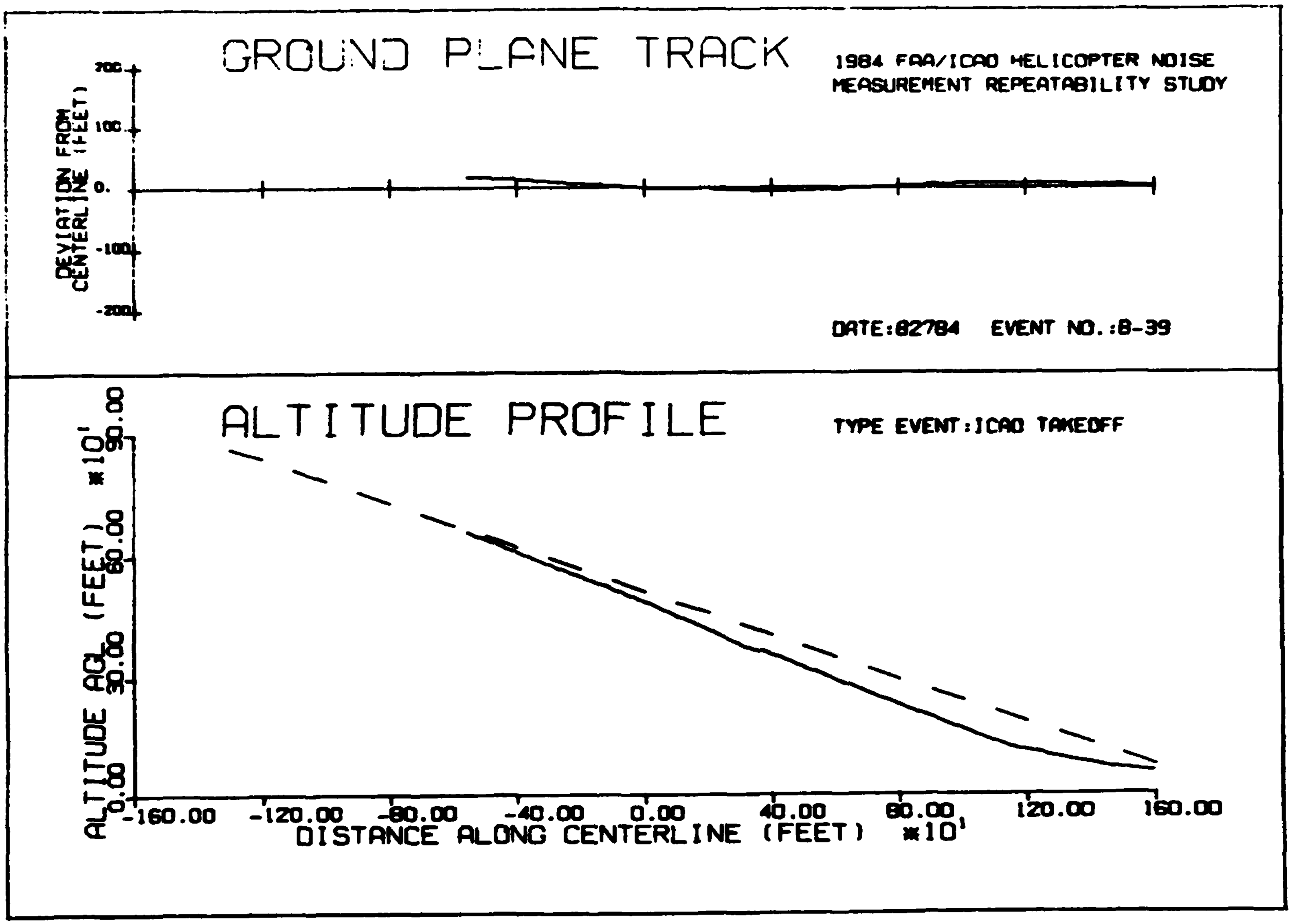

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82784 EVENT NO.:8-51
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.1


GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82784 EVENT NO.:B-39
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

APPENDIX E

Laser Trajectory Plots and Ground Tracks for Takeoff Operations

The laser takeoff tracking plots show the reference flight path and actual flight path of the helicopter for selected test runs.

The ground plane track (plan view) shows the helicopter's movement along the flight path as if the reader were looking down at it from above the ground. The scale on the left side of the graph shows the distance in feet of helicopter deviation to the left and right of the reference flight path. The actual flight path of the helicopter is the line that follows, (with deviation to the left and right), the reference flight path.

The altitude profile shows the helicopter's movement vertically and horizontally along the flight path. The reference flight path is the dashed line. The actual flight path is the solid line that approximately follows the reference line. Please note that the x-axis is the distance along the center line in feet x 10. At the center of the x-axis is the center line center (CLC) mark of 0.00 feet. Positive values of x are toward site 5 and negative values are toward site 4. The y-axis is altitude above ground level (AGL) in feet x 10.

Table D.24

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H (SOFT SURFACE) - 300 M. WEST AUG. 29,1984

GROUND IDLE *****

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	48.7	48.9	53.5	50.1	49.5	-	54.9	52.8	51.8	7.1	51.2	2.5
15	46.4	45.8	49.7	48.0	46.3	-	54.7	49.3	49.8	10.4	48.6	3.1
16	46.8	44.8	50.0	47.5	45.0	-	50.6	47.7	48.0	13.4	47.5	2.2
17	51.3	49.0	50.2	51.5	50.2	-	53.2	50.0	51.0	20.8	50.8	1.4
18	55.6	46.1	49.4	46.1	45.8	-	50.8	46.5	50.2	24.0	48.6	3.6
19	51.0	49.9	51.5	51.1	54.0	-	53.3	50.3	51.8	29.3	51.6	1.5
20	50.8	49.5	53.0	54.8	49.5	-	58.7	51.8	53.8	34.7	52.6	3.3
21	47.1	45.2	47.0	48.0	44.8	-	55.6	45.7	49.5	33.4	47.6	3.7
22	44.4	45.4	48.3	45.6	43.3	-	48.4	45.1	46.2	32.8	45.8	1.9
23	42.7	42.5	48.5	44.0	39.6	-	48.2	40.7	45.0	34.1	43.7	3.5
24	40.0	38.3	46.5	38.9	35.5	-	46.0	37.5	42.3	33.7	40.4	4.2
25	33.6	32.2	41.1	33.1	34.1	-	42.7	32.2	37.8	31.2	35.6	4.4
26	32.7	30.2	43.1	29.8	27.5	-	39.3	30.9	36.9	32.1	33.4	5.7
27	32.7	33.4	40.7	31.2	31.5	-	37.5	35.8	36.0	32.8	34.7	3.5
28	32.9	34.9	39.3	32.0	33.2	-	37.0	36.1	35.8	33.9	35.1	2.6
29	33.8	35.0	37.3	31.0	32.7	-	35.9	37.3	35.2	34.4	34.7	2.4
30	36.8	33.8	37.1	31.4	36.0	-	34.0	40.6	36.6	36.6	35.7	3.0
31	37.7	32.7	37.0	28.6	34.6	-	32.8	41.6	36.7	37.3	35.0	4.2
32	40.9	33.8	35.8	28.9	34.2	-	31.4	43.9	38.3	39.3	35.6	5.2
33	44.5	33.6	36.2	29.1	35.4	-	31.6	44.8	40.0	41.2	36.5	6.1
34	43.8	35.5	37.2	32.1	36.9	-	35.3	47.6	41.6	42.9	38.3	5.4
35	44.8	38.5	37.1	33.0	33.9	-	37.2	51.0	44.1	45.3	39.4	6.4
36	45.3	41.0	37.1	33.0	33.0	-	38.0	52.2	45.1	46.1	39.9	6.9
37	40.6	36.3	34.6	30.7	31.2	-	36.3	46.2	39.8	40.3	36.6	5.4
38	41.0	36.2	34.1	29.4	29.9	-	35.8	47.4	40.6	40.5	36.3	6.3
39	38.2	35.6	35.5	35.4	34.7	-	32.1	42.9	37.7	36.6	36.3	3.4
40	34.6	32.9	30.3	29.5	27.1	-	32.4	40.9	34.8	32.3	32.5	4.4
AL	53.5	48.2	49.8	45.0	46.3	-	49.5	58.4	52.5	52.5	50.1	4.6
OASPL	60.8	57.8	61.1	60.0	58.7	-	64.2	61.5	61.0	-	60.6	2.1
PNL	67.6	63.2	63.5	58.6	60.0	-	63.8	72.6	67.5	-	64.2	4.7
PNLT	68.5	64.4	64.2	59.6	61.1	-	64.5	73.8	68.5	-	65.2	4.7

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	1.1	1.4	3.7	1.8	1.9	0.0	1.3	2.0
15	1.8	1.6	2.2	0.9	1.5	0.0	0.8	0.8
16	1.5	2.4	3.7	1.2	1.4	0.0	1.9	0.9
17	0.9	1.3	2.7	1.0	0.6	0.0	2.2	0.7
18	1.8	1.5	2.0	1.5	1.1	0.0	2.4	0.9
19	1.2	0.8	1.3	0.9	2.6	0.0	1.9	0.8
20	1.2	0.7	1.3	1.3	0.8	0.0	2.4	1.0
21	2.1	0.8	1.3	2.8	0.9	0.0	4.4	0.9
22	1.6	0.7	1.6	1.2	0.6	0.0	0.9	0.6
23	2.5	1.0	3.4	0.8	0.6	0.0	1.3	0.6
24	2.7	2.0	4.1	1.0	1.0	0.0	2.6	0.7
25	1.7	2.7	3.5	1.1	3.2	0.0	3.7	0.7
26	3.2	3.2	5.8	1.3	1.0	0.0	4.1	0.7
27	1.8	3.1	4.8	0.9	1.7	0.0	2.7	0.6
28	1.8	3.6	3.7	1.2	1.9	0.0	3.0	1.0
29	1.5	3.4	2.7	1.6	2.1	0.0	3.4	1.3
30	2.5	1.6	3.9	1.7	3.2	0.0	3.0	1.4
31	3.0	1.6	4.7	1.7	3.4	0.0	3.7	1.9
32	3.5	2.6	5.0	2.3	4.1	0.0	3.4	2.2
33	4.1	2.3	4.7	2.2	3.9	0.0	2.9	2.9
34	4.1	1.9	3.7	1.8	3.4	0.0	1.8	3.3
35	4.4	2.2	3.0	1.0	2.4	0.0	1.3	3.3
36	4.1	2.2	2.4	0.6	1.7	0.0	1.2	3.1
37	3.0	1.6	1.7	0.4	1.5	0.0	1.5	2.7
38	3.2	1.8	2.1	0.5	1.2	0.0	2.1	2.4
39	1.8	1.1	0.6	0.5	0.5	0.0	1.2	2.3
40	2.0	2.0	0.8	0.7	0.9	0.0	1.0	1.5
AL	3.3	1.6	2.0	0.5	1.9	0.0	1.7	2.5
OASPL	0.9	0.7	1.5	0.6	1.2	0.0	1.4	1.2
PNL	3.2	1.7	1.6	0.6	2.0	0.0	1.7	2.3
PNLT	3.2	1.9	1.7	0.6	2.0	0.0	1.9	2.4

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

***** - TABULATED LEVELS ARE CONTAMINATED BY LOCAL AMBIENT.

Table D.23

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H (SOFT SURFACE) - 300 M. WEST AUG. 29,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	68.3	68.0	69.0	67.9	68.1	67.5	68.1	67.8	68.1	23.4	68.1	0.4
15	55.8	56.3	57.2	56.3	55.9	55.3	57.2	57.0	56.4	17.0	56.4	0.7
16	64.9	65.2	67.2	65.3	65.1	64.6	64.4	64.8	65.3	30.7	65.2	0.9
17	63.9	64.5	65.2	64.1	63.0	62.4	63.7	63.9	63.9	33.7	63.8	0.9
18	61.2	61.6	62.5	61.2	60.0	59.7	60.3	60.2	60.9	34.7	60.8	0.9
19	69.5	66.1	64.1	68.3	68.6	69.9	65.5	71.0	68.4	45.9	67.9	2.4
20	59.6	57.5	57.0	58.3	58.6	59.3	58.9	61.0	58.9	39.8	58.8	1.3
21	51.5	50.1	51.8	55.7	51.1	48.9	52.4	56.3	52.9	36.8	52.2	2.6
22	58.8	54.0	58.6	55.7	60.1	55.8	56.1	56.3	57.3	43.9	56.9	2.0
23	47.7	45.4	49.8	46.3	48.5	46.4	48.5	46.0	47.6	36.7	47.3	1.5
24	42.9	39.8	45.5	40.6	42.7	42.4	43.2	47.3	43.7	35.1	43.0	2.4
25	42.8	35.3	42.1	36.0	35.9	34.7	38.8	40.6	39.3	32.7	38.3	3.2
26	40.5	34.0	41.2	36.2	35.2	32.9	38.8	38.2	38.0	33.2	37.1	3.0
27	42.2	34.9	42.3	36.4	36.1	35.3	38.5	39.3	39.0	35.8	38.1	3.0
28	41.1	37.9	45.6	37.0	38.3	37.6	38.9	41.5	40.7	38.8	39.7	2.9
29	42.7	39.5	46.4	37.4	37.8	38.6	38.1	42.6	41.6	40.8	40.4	3.2
30	46.0	42.5	47.4	38.8	38.9	40.8	39.5	45.6	43.6	43.6	42.4	3.5
31	47.4	43.9	47.7	38.7	38.8	42.6	39.9	46.8	44.6	45.2	43.2	3.8
32	46.7	42.9	46.9	37.3	37.7	43.7	38.7	46.7	44.1	45.1	42.6	4.2
33	46.5	41.5	45.0	36.4	37.4	42.5	36.9	45.6	43.0	44.2	41.5	4.1
34	46.3	41.3	43.9	36.6	38.7	40.1	37.6	44.3	42.3	43.6	41.1	3.5
35	45.0	40.8	41.9	35.7	39.3	39.6	38.5	42.9	41.3	42.5	40.5	2.9
36	43.4	40.0	40.4	34.3	39.0	39.1	38.7	41.5	40.2	41.2	39.5	2.6
37	41.2	37.2	38.2	32.3	37.6	37.8	37.4	39.2	38.2	38.7	37.6	2.5
38	41.8	38.1	35.7	29.2	36.2	36.2	35.8	39.5	37.7	37.6	36.6	3.7
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	57.3	53.4	56.6	51.6	53.1	53.9	52.0	56.7	54.9	54.9	54.3	2.2
OASPL	74.0	72.9	73.7	73.4	73.5	73.6	72.6	74.5	73.6	-	73.5	0.6
PNL	71.4	67.4	69.8	66.9	68.2	69.0	66.7	71.6	69.5	-	68.9	1.9
PNLT	72.9	68.5	71.1	68.3	69.9	70.8	67.7	73.3	70.9	-	70.3	2.1

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

	0	45	90	135	180	225	270	315
14	0.4	0.3	0.3	0.2	0.5	0.2	0.2	0.3
15	0.4	0.7	0.4	1.1	0.5	0.2	0.5	0.5
16	0.5	0.6	0.5	0.6	0.5	0.4	0.4	0.7
17	0.6	0.4	0.5	0.6	0.8	0.7	0.5	0.6
18	0.7	0.7	0.8	0.7	0.7	0.6	0.9	0.8
19	0.6	0.7	0.8	0.8	0.5	1.0	1.6	1.2
20	0.8	1.0	1.1	1.0	0.9	0.8	1.5	0.8
21	1.7	0.9	1.7	1.9	1.5	0.6	1.4	2.3
22	0.8	0.8	0.9	1.2	1.0	1.7	1.4	1.2
23	1.6	0.2	1.6	0.8	1.4	1.0	2.1	0.5
24	1.4	1.0	1.6	1.1	1.6	1.8	1.8	1.7
25	2.9	1.1	1.7	1.5	1.6	1.2	2.6	2.1
26	1.9	1.2	1.6	1.8	1.7	1.5	4.0	1.5
27	2.4	1.7	2.8	1.1	2.3	1.7	3.2	1.3
28	1.8	2.2	3.7	1.1	2.3	1.6	2.8	1.4
29	2.6	3.2	3.3	1.7	2.6	1.8	1.9	1.7
30	3.0	4.0	3.1	2.0	2.7	2.3	1.2	3.1
31	2.9	4.4	2.8	1.7	2.7	3.0	1.0	3.7
32	2.8	4.3	2.7	2.4	3.1	3.9	1.3	3.7
33	2.6	3.5	2.4	1.7	2.5	4.0	0.9	3.7
34	2.4	2.7	2.4	1.7	2.0	2.1	0.5	3.3
35	2.1	2.9	2.2	1.3	1.6	1.1	0.7	2.8
36	1.8	2.8	2.3	1.0	1.2	0.7	0.8	2.4
37	1.8	2.4	2.3	0.6	1.4	0.6	0.6	2.0
38	2.2	3.4	2.7	0.7	2.2	0.8	0.7	2.8
39	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	1.5	2.4	1.9	0.5	1.0	1.6	0.7	1.9
OASPL	0.4	0.4	0.4	0.5	0.3	0.5	0.5	0.6
PNL	0.9	1.8	1.6	0.5	0.8	1.0	0.8	0.9
PNLT	1.0	1.8	1.7	0.6	0.8	1.1	0.8	0.9

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.22

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 6H (SOFT SURFACE) - 300 M. WEST AUG. 29,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	71.4	71.7	71.9	71.6	69.7	69.0	68.8	68.2	70.5	25.8	70.3	1.5
15	58.6	58.2	58.8	57.5	57.6	56.9	56.6	57.4	57.8	18.4	57.7	0.8
16	66.5	67.9	68.6	65.4	68.1	64.4	65.6	67.2	66.9	32.3	66.7	1.5
17	64.6	67.0	68.5	63.2	65.6	64.7	64.3	66.3	65.8	35.6	65.5	1.7
18	61.9	65.1	66.6	63.6	60.8	58.5	60.2	61.6	63.0	36.8	62.3	2.7
19	69.8	64.7	68.8	73.0	69.6	75.1	68.6	72.2	71.2	48.7	70.2	3.2
20	61.2	59.2	64.1	64.8	60.7	65.2	61.4	63.2	62.9	43.8	62.5	2.2
21	53.2	55.1	58.1	60.1	53.9	55.8	53.5	56.5	56.4	40.3	55.8	2.4
22	59.2	57.4	62.9	59.5	56.0	59.3	58.8	56.4	59.2	45.8	58.7	2.2
23	48.8	49.9	55.5	53.6	46.0	48.9	52.2	47.4	51.4	40.5	50.3	3.2
24	43.2	46.6	47.2	45.3	44.3	42.8	44.4	44.1	45.0	36.4	44.7	1.5
25	39.1	40.1	40.9	40.3	41.2	40.4	40.1	41.9	40.6	34.0	40.5	0.8
26	39.6	38.7	39.7	39.8	39.3	41.4	38.9	43.1	40.3	35.5	40.1	1.5
27	42.0	40.0	40.1	41.6	39.7	45.5	39.7	45.5	42.4	39.2	41.8	2.5
28	45.6	43.4	42.3	43.7	44.1	49.8	43.1	49.3	46.1	44.2	45.2	2.9
29	46.8	44.0	43.1	44.1	43.7	51.2	43.6	52.0	47.6	46.8	46.1	3.6
30	48.8	45.7	44.0	44.4	44.6	52.3	45.3	54.3	49.2	49.2	47.4	4.0
31	47.8	46.7	45.0	44.6	42.9	53.7	48.0	54.9	50.0	50.6	47.9	4.3
32	46.2	44.1	43.9	44.1	42.3	53.7	49.3	53.8	49.4	50.4	47.2	4.6
33	45.0	42.3	42.1	43.7	40.8	52.1	48.7	52.5	48.1	49.3	45.9	4.6
34	43.5	42.1	41.0	43.0	42.0	49.0	45.8	50.8	46.1	47.4	44.6	3.6
35	42.3	41.6	40.4	41.0	41.6	46.2	41.9	48.6	44.0	45.2	42.9	2.9
36	40.2	40.7	39.5	39.9	40.6	42.5	39.7	45.9	41.7	42.7	41.1	2.1
37	37.6	38.5	37.5	38.2	39.0	39.3	37.1	41.9	38.9	39.4	38.6	1.5
38	35.1	37.0	34.9	36.3	37.3	36.6	34.5	38.9	36.5	36.4	36.3	1.5
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	57.2	55.4	56.4	56.9	54.9	62.1	57.5	62.7	58.9	58.9	57.9	2.9
OASPL	75.5	75.4	76.8	76.8	75.1	77.3	74.1	76.0	76.0	-	75.9	1.1
PNL	71.0	69.2	71.1	72.7	70.1	75.7	71.0	75.2	72.8	-	72.0	2.4
PNLT	72.4	70.0	72.1	74.2	71.6	77.9	72.3	76.9	74.2	-	73.4	2.7

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.4	0.4	0.3	0.3	0.5	0.4	0.5	0.8
15	0.5	0.4	0.5	).5	0.5	0.5	0.4	0.5
16	0.8	0.6	0.5	1.0	0.7	0.7	0.5	0.8
17	1.1	0.7	0.3	2.4	0.6	0.9	0.9	0.8
18	0.9	0.7	0.5	2.1	1.7	1.3	1.2	1.0
19	1.1	1.2	1.4	0.6	1.0	0.6	3.6	1.1
20	1.1	1.4	1.6	0.7	1.4	0.6	2.6	1.2
21	0.7	1.9	1.7	2.4	1.1	1.4	1.4	0.9
22	1.1	1.5	0.9	1.7	1.2	1.0	1.6	1.6
23	1.5	1.5	1.2	1.5	0.0	1.5	1.4	1.3
24	1.7	2.0	1.8	1.7	0.9	2.1	1.5	1.1
25	1.5	1.6	1.8	1.6	2.4	2.0	3.4	1.6
26	2.5	2.0	2.3	1.7	2.8	2.0	3.7	3.1
27	2.9	2.1	1.7	1.8	2.7	2.1	2.2	2.4
28	3.8	2.7	1.3	1.7	1.7	2.8	1.9	2.4
29	3.5	3.3	2.3	2.5	2.9	2.9	1.4	2.5
30	4.2	3.8	2.2	2.8	3.1	2.6	2.0	3.1
31	3.7	4.1	2.2	3.0	2.1	2.5	2.3	3.1
32	2.9	3.7	2.3	3.0	1.9	2.2	3.1	2.6
33	2.7	3.6	2.4	2.9	1.6	1.9	3.1	2.8
34	2.3	3.3	2.1	2.2	2.2	1.8	2.9	2.9
35	1.6	2.6	1.6	1.5	1.9	1.5	1.6	2.8
36	1.3	2.3	.5	1.1	1.4	1.3	1.1	2.7
37	1.2	1.8	1.1	1.1	0.9	1.0	0.8	2.1
38	1.2	2.3	1.0	1.4	1.1	0.8	0.6	1.8
39	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	2.1	2.6	1.1	1.0	0.8	1.6	1.9	2.2
OASPL	0.5	0.3	0.4	0.5	0.6	0.5	1.2	0.5
PNL	1.3	2.0	1.0	0.7	0.4	0.9	2.1	1.5
PNLT	1.3	2.0	0.8	0.7	0.5	0.9	2.2	1.5

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.21

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 9/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 29,1984

GROUND IDLE *****

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	48.5	-	51.7	52.4	50.4	49.4	49.6	52.0	50.8	6.1	50.6	1.5
15	46.5	-	53.4	50.7	48.5	47.1	47.6	49.9	49.7	10.3	49.1	2.4
16	45.1	-	49.2	49.5	48.1	45.2	46.8	49.2	47.9	13.3	47.6	1.9
17	47.9	-	51.3	48.8	48.8	45.8	46.2	47.4	48.4	18.2	48.0	1.9
18	45.2	-	49.0	46.4	55.1	46.0	46.9	46.2	49.4	23.2	47.8	3.4
19	50.4	-	51.6	49.2	51.3	49.1	48.9	48.4	50.0	27.5	49.8	1.3
20	48.7	-	59.3	50.3	49.3	48.2	50.0	49.8	52.9	33.8	50.8	3.8
21	44.1	-	57.3	47.7	46.6	46.3	46.9	47.3	50.6	34.5	48.0	4.2
22	47.1	-	51.4	48.7	47.8	48.6	49.6	48.7	49.0	35.6	48.8	1.4
23	52.0	-	56.7	53.9	52.6	55.4	53.6	52.7	54.1	43.2	53.8	1.7
24	50.4	-	55.3	53.3	50.2	52.9	51.8	49.5	52.3	43.7	51.9	2.1
25	48.4	-	53.3	50.4	45.8	50.2	49.6	47.9	49.9	43.3	49.4	2.3
26	43.7	-	48.4	48.7	45.1	49.0	45.7	45.5	47.0	42.2	46.6	2.1
27	46.7	-	47.8	49.7	46.0	48.4	48.5	47.4	47.9	44.7	47.8	1.2
28	43.6	-	45.9	48.9	45.7	46.9	45.0	43.6	46.0	44.1	45.7	1.9
29	44.5	-	44.3	44.3	39.9	44.2	43.9	43.3	43.7	42.9	43.5	1.6
30	45.3	-	42.6	45.3	39.9	43.6	42.4	45.1	43.8	43.8	43.5	2.0
31	43.1	-	39.0	41.3	35.5	39.7	39.5	43.0	40.8	41.4	40.2	2.6
32	43.2	-	36.7	41.5	32.7	37.7	37.5	42.0	39.9	40.9	38.8	3.7
33	42.2	-	35.1	40.3	30.6	34.3	34.6	38.0	37.9	39.1	36.4	4.0
34	38.3	-	34.1	38.3	30.4	33.7	32.7	35.5	35.5	36.8	34.7	2.9
35	37.7	-	34.9	35.2	30.0	33.4	32.9	37.7	35.2	36.4	34.5	2.7
36	40.0	-	35.3	35.9	30.7	32.6	33.9	39.9	36.7	37.7	35.5	3.5
37	36.7	-	33.3	34.0	28.4	29.6	30.6	35.2	33.4	33.9	32.5	3.1
38	38.1	-	32.9	32.8	25.7	27.9	29.6	35.5	33.5	33.4	31.8	4.3
39	35.6	-	29.7	33.1	31.4	32.4	32.9	35.0	33.3	32.2	32.9	2.0
40	30.4	-	25.9	27.6	24.0	24.3	25.7	29.5	27.4	24.9	26.8	2.5
AL	54.3	-	55.0	55.2	51.1	54.0	53.1	53.7	53.9	53.9	53.8	1.4
OASPL	60.4	-	65.6	62.4	61.6	61.5	61.1	61.2	62.3	-	62.0	1.7
PNL	66.6	-	67.2	66.4	62.6	65.2	64.4	66.2	65.8	-	65.5	1.6
PNLT	67.6	-	68.0	67.2	63.7	66.3	65.4	67.3	66.3	-	66.5	1.5

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	2.6	0.0	1.0	3.1	1.6	2.2	1.5	2.4
15	1.8	0.0	1.1	2.9	1.6	1.4	1.8	1.6
16	0.8	0.0	2.3	1.9	1.4	1.4	1.5	1.8
17	0.8	0.0	2.5	1.4	0.9	1.1	1.1	1.6
18	0.9	0.0	2.7	1.2	2.5	1.2	1.6	1.2
19	1.3	0.0	1.5	0.6	1.9	1.1	0.9	0.8
20	0.9	0.0	3.1	1.5	1.1	1.2	0.8	1.1
21	0.7	0.0	4.5	0.8	1.8	0.8	0.9	1.9
22	0.7	0.0	0.6	0.8	1.2	0.8	0.7	0.8
23	0.8	0.0	1.5	0.8	0.9	1.3	1.0	0.9
24	0.8	0.0	1.9	0.8	1.0	1.5	0.9	1.1
25	0.7	0.0	2.2	1.2	1.2	1.4	1.0	1.3
26	1.1	0.0	0.8	1.6	1.4	1.7	1.1	1.6
27	1.3	0.0	0.9	2.6	2.2	2.0	1.2	2.3
28	1.3	0.0	1.5	3.2	2.4	2.3	1.5	2.5
29	1.8	0.0	2.1	2.6	2.5	2.1	1.8	3.0
30	2.0	0.0	2.6	4.1	2.3	2.5	2.1	3.0
31	2.5	0.0	3.0	4.3	2.7	2.6	2.0	3.2
32	2.9	0.0	3.6	5.2	2.4	2.5	2.2	3.2
33	3.3	0.0	3.8	5.6	2.4	2.5	2.4	2.6
34	3.2	0.0	2.8	5.2	2.0	2.2	1.9	2.2
35	3.3	0.0	1.9	3.2	0.8	1.8	1.4	2.7
36	3.7	0.0	2.2	3.1	0.7	1.0	[illegible]	3.0
37	3.6	0.0	2.1	3.1	0.8	0.9	[illegible]	2.5
38	3.7	0.0	2.9	3.6	0.9	1.2	1.3	2.7
39	2.3	0.0	2.6	1.1	0.5	0.4	0.6	1.2
40	3.0	0.0	2.6	1.7	0.8	0.6	0.8	2.6
AL	1.8	0.0	1.2	2.1	1.3	1.4	0.9	2.1
OASPL	0.6	0.0	1.6	0.9	0.5	0.8	0.6	0.9
PNL	2.2	0.0	1.3	1.8	0.9	1.2	0.7	2.1
PNLT	2.3	0.0	1.3	1.9	0.8	1.1	0.8	2.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

***** - TABULATED LEVELS ARE CONTAMINATED BY LOCAL AMBIENT.

Table D.20

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 29,1984

FLIGHT IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	65.5	65.4	65.5	65.5	66.0	65.9	65.9	65.8	65.7	21.0	65.7	0.2
15	54.3	54.1	56.7	56.0	55.4	56.5	54.9	54.6	55.4	16.0	55.3	1.0
16	63.5	63.5	63.5	64.1	64.1	63.9	63.7	64.8	63.9	29.3	63.9	0.4
17	63.5	63.2	62.0	63.2	62.5	64.0	62.6	63.6	63.1	32.9	63.1	0.7
18	59.3	59.8	59.0	60.3	59.8	59.6	58.8	59.8	59.6	33.4	59.5	0.5
19	65.6	64.5	62.8	65.8	66.5	66.1	59.5	67.0	65.2	42.7	64.7	2.5
20	56.9	57.0	55.9	58.3	58.7	57.6	55.5	58.3	57.4	38.3	57.3	1.2
21	52.7	50.7	50.5	58.5	54.9	52.4	52.1	56.0	54.3	38.2	53.5	2.8
22	61.5	58.6	60.1	62.6	65.7	59.7	57.2	60.1	61.5	48.1	60.7	2.6
23	55.3	55.5	55.9	59.1	59.0	57.7	57.0	57.4	57.3	46.4	57.1	1.5
24	58.2	59.5	63.1	62.7	64.1	60.3	60.8	60.6	61.6	53.0	61.2	2.0
25	56.2	56.8	59.1	62.0	61.5	57.1	59.4	57.6	59.2	52.6	58.7	2.2
26	55.1	55.2	57.3	60.7	60.4	56.6	57.8	56.7	58.0	53.2	57.5	2.1
27	54.0	53.3	56.3	59.9	58.8	55.4	57.1	55.6	56.9	53.7	56.4	2.2
28	52.3	51.6	54.7	58.9	57.4	54.4	55.9	55.3	55.7	53.8	55.1	2.4
29	50.1	49.0	51.2	56.1	54.8	51.7	53.7	54.1	53.2	52.4	52.6	2.5
30	48.0	46.2	48.6	54.5	53.8	49.9	51.8	52.8	51.5	51.5	50.7	3.0
31	45.3	42.4	45.9	52.5	51.5	48.6	49.1	51.0	49.4	50.0	48.3	3.5
32	41.6	39.3	42.4	48.5	47.5	45.1	46.2	48.6	45.9	46.9	44.9	3.5
33	38.8	35.7	39.8	45.1	44.3	42.2	41.9	45.9	42.8	44.0	41.7	3.5
34	37.2	34.4	37.9	42.6	42.8	40.1	39.6	42.0	40.3	41.6	39.6	3.0
35	35.8	34.0	35.7	39.6	39.2	36.9	36.7	37.1	37.2	38.4	36.9	1.8
36	34.2	33.7	33.6	35.7	36.3	34.4	34.7	35.7	34.9	35.9	34.8	1.0
37	32.7	32.0	31.6	32.9	34.2	31.3	32.1	33.1	32.6	33.1	32.5	0.9
38	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	59.5	59.0	61.5	65.0	64.5	61.1	62.2	62.3	62.4	62.4	61.9	2.1
OASPL	72.4	72.0	72.3	74.0	74.3	72.9	71.9	73.3	73.0	-	72.9	0.9
PNL	71.0	70.8	73.2	75.8	75.9	72.6	72.8	73.7	73.7	-	73.2	1.9
PNLT	72.3	71.8	74.3	76.8	77.3	73.8	73.2	75.0	74.8	-	74.3	2.0

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.3	0.4	0.4	0.3	0.5	0.6	0.2	0.3
15	0.2	0.4	0.6	0.4	0.6	1.3	0.8	0.4
16	0.5	0.8	0.6	0.5	0.7	0.9	0.5	0.5
17	0.5	0.7	0.6	0.7	0.7	0.8	0.3	0.5
18	0.6	0.8	1.1	0.9	0.9	1.6	0.6	0.6
19	0.7	0.6	1.5	1.4	0.4	0.9	0.7	0.7
20	0.9	0.7	1.4	1.2	1.0	1.7	1.3	0.8
21	2.3	1.3	1.7	2.4	1.6	2.5	1.8	2.8
22	0.9	1.3	2.5	1.9	0.8	1.8	1.0	1.1
23	0.9	1.0	2.2	1.2	0.7	2.3	0.8	1.3
24	1.0	1.1	2.3	1.6	1.1	1.6	1.0	1.5
25	1.7	1.1	2.3	1.8	1.0	2.2	1.1	1.5
26	1.9	1.5	2.6	2.1	1.4	2.5	1.3	2.0
27	2.2	1.6	2.8	2.7	1.7	2.4	1.1	2.2
28	2.6	1.6	2.8	2.8	1.9	2.7	1.2	2.4
29	3.5	2.0	2.9	3.7	2.3	2.8	1.5	2.7
30	3.7	2.5	2.8	4.5	2.6	2.9	1.5	2.7
31	3.6	2.7	2.6	5.0	2.6	3.4	1.6	2.6
32	3.5	3.1	2.1	4.4	2.9	3.0	1.8	2.3
33	3.1	2.3	1.7	3.9	3.3	2.8	1.5	2.3
34	2.9	1.3	1.7	3.4	3.4	2.7	1.3	1.8
35	2.2	0.8	1.1	2.8	2.8	2.4	1.2	1.7
36	1.6	0.8	0.9	1.8	2.3	1.8	1.5	1.8
37	1.0	0.8	0.8	1.6	2.2	1.3	1.2	1.9
38	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	1.8	1.1	2.1	2.3	1.4	2.1	0.9	1.9
OASPL	0.3	0.4	0.7	0.6	0.4	0.9	0.2	0.5
PNL	1.4	0.9	1.8	1.7	1.2	1.7	0.7	1.4
PNLT	1.3	0.9	1.8	1.7	1.3	1.6	0.8	1.4

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz
* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES
**** - 32 SECOND AVERGING TIME

Table D.19

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC
1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 5H (HARD SURFACE) - 300 M. EAST AUG. 29,1984

HOVER IN GROUND EFFECT

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	58.8	58.7	58.8	58.6	52.4	57.0	57.4	57.3	57.7	13.0	57.4	2.1
15	48.9	49.2	49.3	48.9	41.3	46.5	47.6	47.3	47.9	8.5	47.4	2.7
16	58.5	61.8	61.8	59.4	59.7	58.2	60.6	60.6	60.3	25.7	60.1	1.4
17	57.9	60.1	58.7	58.5	56.4	57.9	58.4	58.0	58.3	28.1	58.2	1.0
18	58.9	61.0	60.4	61.1	57.7	58.3	60.9	58.9	59.8	33.6	59.6	1.4
19	64.5	63.8	63.0	67.6	64.2	69.5	61.4	65.5	65.7	43.2	64.9	2.6
20	57.8	58.2	58.7	63.9	59.6	60.4	58.0	58.3	59.9	40.8	59.4	2.0
21	54.1	53.3	54.2	62.7	59.9	57.0	53.9	54.2	57.6	41.5	56.2	3.4
22	59.0	59.2	65.2	66.0	66.5	65.7	58.5	57.7	63.7	50.3	62.5	3.6
23	60.0	55.6	60.1	66.6	66.0	63.0	58.1	59.8	62.6	51.7	61.1	3.8
24	62.6	59.2	65.7	68.7	68.3	65.2	57.8	61.4	65.1	56.5	63.6	4.0
25	63.1	56.2	62.3	69.2	68.9	62.6	56.7	60.7	64.7	58.1	62.5	4.8
26	63.7	55.2	59.5	68.6	68.8	61.9	56.2	60.8	64.3	59.5	61.8	5.1
27	64.5	54.8	56.8	66.6	68.7	62.5	54.8	60.1	63.7	60.5	61.1	5.4
28	62.5	52.8	54.3	64.2	67.0	63.6	53.1	59.3	62.2	60.3	59.6	5.6
29	59.2	47.9	51.3	60.0	63.6	60.8	50.7	57.4	58.9	58.1	56.4	5.7
30	54.7	43.9	47.8	56.0	59.8	56.8	45.5	54.7	55.0	55.0	52.4	5.8
31	51.6	41.9	45.4	52.0	56.7	54.8	43.1	52.8	52.2	52.8	49.8	5.6
32	46.8	38.2	41.9	47.3	52.0	52.9	40.1	49.9	48.6	49.6	46.1	5.5
33	43.1	36.2	38.2	44.5	48.1	49.5	38.3	47.0	45.3	46.5	43.1	5.0
34	40.2	35.5	36.0	41.6	45.5	46.3	36.5	44.9	42.6	43.9	40.8	4.5
35	38.8	34.6	34.9	38.9	42.7	43.4	35.1	42.7	40.2	41.4	38.9	3.7
36	36.9	32.9	32.4	35.5	38.0	41.5	32.9	39.8	37.4	38.4	36.2	3.4
37	34.8	31.1	30.6	33.0	33.9	38.7	31.3	36.9	34.7	35.2	33.8	2.9
38	-	-	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-	-	-
AL	67.3	59.0	63.2	70.6	72.1	68.1	59.6	65.2	67.6	67.6	65.6	4.0
OASPL	73.1	70.5	72.7	77.3	77.3	75.0	69.8	72.1	74.3	-	73.5	2.8
PNL	77.3	70.6	75.0	81.0	81.8	78.7	70.9	76.0	78.1	-	76.4	4.2
PNLT	78.3	71.4	76.3	81.8	82.7	80.4	71.3	77.2	79.1	-	77.4	4.3

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA
@ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	0.0	0.2	0.1	0.2	0.4	0.5	0.4	0.5
15	0.4	0.4	0.4	0.5	1.1	0.5	0.5	0.5
16	0.5	0.5	0.6	1.3	0.6	0.6	0.4	0.5
17	0.1	0.9	0.6	1.1	0.7	0.1	0.5	0.1
18	0.8	0.4	0.8	1.0	1.1	0.8	0.5	0.8
19	1.9	1.1	2.6	2.1	1.4	0.9	1.6	1.1
20	0.6	0.8	0.9	3.0	1.5	1.4	0.8	1.0
21	1.9	1.2	1.2	2.4	1.6	1.3	1.5	1.4
22	3.0	1.9	2.2	1.6	1.4	1.6	1.4	1.4
23	4.9	1.5	1.9	2.4	1.7	1.7	1.2	1.6
24	5.4	1.7	1.5	2.9	1.4	1.9	1.2	2.1
25	5.1	2.1	1.6	3.3	2.1	2.2	2.0	2.3
26	6.3	1.7	2.1	3.8	2.0	2.2	2.4	2.7
27	6.7	1.7	1.9	4.0	2.3	1.9	2.2	2.7
28	6.8	1.1	1.9	4.1	2.4	2.1	1.9	2.3
29	6.1	0.8	2.0	4.5	3.0	2.0	1.9	2.6
30	6.6	1.8	2.3	4.5	3.2	1.8	1.8	2.1
31	6.5	2.1	2.5	4.4	3.2	1.9	1.7	2.0
32	5.7	1.6	2.5	4.2	3.4	2.6	1.5	1.8
33	4.5	1.6	2.4	3.9	2.8	2.6	1.1	1.7
34	3.4	1.3	2.1	3.1	2.7	2.1	1.0	1.9
35	2.7	0.9	1.6	2.8	2.7	2.0	0.9	2.2
36	2.2	1.0	1.1	2.3	3.0	3.0	0.6	2.7
37	1.8	0.6	0.9	2.0	2.6	2.9	0.6	2.5
38	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-
AL	6.0	1.1	1.4	3.5	2.1	1.6	1.4	2.1
OASPL	3.3	0.4	1.0	2.4	1.6	1.0	0.6	1.1
PNL	5.1	0.9	1.3	3.2	1.8	1.5	1.2	1.9
PNLT	5.3	1.0	1.4	3.1	1.9	1.6	1.2	2.0

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

Table D.18

US/CANADIAN TEST - DULLES INTERNATIONAL AIRPORT

BELL 206-L1 HELICOPTER

DOT/TSC 1/ 8/85

1/3 OCTAVE NOISE DATA -- STATIC TESTS

AS MEASURED****

SITE: 4H (SOFT SURFACE) - 150 M. WEST AUG. 29,1984

GROUND IDLE

BAND NO.	LEVELS @ ACOUSTIC EMMISION ANGLES OF (DEGREES) 0	45	90	135	180	225	270	315	AVERAGE LEVEL OVER 360 DEGREES ENERGY *	AVE **	ARITH ***	Std Dv
	SOUND PRESSURE LEVEL dB re 20 microPascal											
14	48.5	49.5	50.4	55.9	51.1	-	51.9	49.4	51.7	7.0	51.0	2.5
15	48.2	44.0	48.1	55.1	48.9	-	53.3	48.3	50.8	11.4	49.4	3.7
16	48.7	45.8	47.5	51.7	48.8	-	48.3	48.2	48.8	14.2	48.4	1.8
17	52.9	50.1	50.2	53.5	53.0	-	51.7	51.5	52.0	21.8	51.8	1.4
18	54.8	47.2	48.5	48.3	47.5	-	50.7	47.7	50.2	24.0	49.2	2.7
19	53.0	52.7	53.2	52.5	53.4	-	53.0	52.3	52.9	30.4	52.9	0.4
20	51.2	51.9	55.1	58.2	51.0	-	60.5	52.4	55.9	36.8	54.3	3.7
21	47.1	48.2	49.6	49.6	48.0	-	56.7	49.7	51.2	35.1	49.8	3.2
22	48.3	51.0	52.6	51.8	50.6	-	53.4	52.0	51.6	38.2	51.4	1.7
23	49.1	52.5	53.5	53.6	54.2	-	56.5	52.4	53.6	42.7	53.1	2.2
24	42.4	44.2	47.7	46.2	45.1	-	49.7	43.8	46.2	37.6	45.6	2.5
25	35.3	32.5	40.2	33.6	31.3	-	46.7	33.0	39.9	33.3	36.1	5.5
26	32.8	30.7	39.7	34.0	32.2	-	42.3	33.9	37.1	32.3	35.1	4.3
27	39.8	37.8	39.9	37.8	38.5	-	42.5	38.0	39.5	36.3	39.2	1.7
28	39.3	36.6	38.5	41.5	42.8	-	41.6	40.4	40.5	38.6	40.1	2.1
29	42.9	38.1	36.2	41.7	42.0	-	41.2	41.9	41.1	40.3	40.6	2.5
30	47.7	43.7	38.9	46.9	47.1	-	42.9	47.4	45.8	45.8	44.9	3.3
31	48.6	44.0	39.4	44.9	46.1	-	41.0	48.7	45.8	46.4	44.7	3.5
32	51.6	46.1	40.3	45.9	46.7	-	40.4	50.5	47.6	48.6	45.9	4.4
33	55.5	45.6	43.5	45.8	48.6	-	39.5	50.8	49.7	50.9	47.0	5.2
34	55.1	46.6	43.3	47.0	51.1	-	40.8	53.3	50.6	51.9	48.2	5.2
35	57.1	51.2	44.7	47.0	48.9	-	42.2	57.3	52.9	54.1	49.8	5.8
36	57.5	54.7	45.1	45.7	48.3	-	41.7	59.3	54.2	55.2	50.3	6.8
37	53.2	51.2	42.8	43.6	47.3	-	39.4	54.6	50.2	50.7	47.4	5.8
38	54.6	54.0	44.8	44.0	46.1	-	39.2	57.4	52.3	52.2	48.6	6.7
39	50.8	52.5	-	-	-	-	-	55.2	53.2	52.1	52.8	2.2
40	51.6	56.9	-	-	-	-	-	57.8	56.2	53.7	55.4	3.4
A	65.2	62.0	55.0	57.0	59.0	-	54.3	66.0	62.5	62.5	59.8	4.7
OASPL	66.1	64.3	62.5	64.6	63.0	-	65.4	67.0	65.4	-	64.7	1.6
PNL	78.9	76.1	69.6	70.9	72.9	-	68.4	80.1	76.7	-	73.8	4.6
PNLT	80.1	77.5	70.3	72.1	74.0	-	69.4	81.2	77.6	-	74.9	4.7

STANDARD DEVIATION(dB) OF 16-2 SECOND SAMPLES OF DATA @ACOUSTIC EMMISION ANGLE SHOWN ABOVE

14	1.3	0.6	2.6	1.0	2.9	0.0	0.6	2.1
15	1.4	0.8	1.8	2.1	2.7	0.0	0.4	2.1
16	1.3	0.1	1.4	1.1	1.8	0.0	1.0	0.8
17	0.4	1.3	1.6	0.5	0.2	0.0	1.0	1.0
18	0.1	0.6	0.8	0.8	2.3	0.0	1.5	1.1
19	1.0	0.6	0.8	0.3	1.0	0.0	0.7	0.3
20	0.1	1.0	0.9	1.6	0.2	0.0	2.9	1.2
21	0.7	0.0	0.8	0.8	0.3	0.0	3.7	1.1
22	0.5	0.2	0.6	0.5	0.7	0.0	0.4	0.7
23	0.6	0.3	0.7	0.4	0.6	0.0	0.5	0.7
24	0.4	0.4	1.1	0.9	0.6	0.0	1.0	0.7
25	1.8	0.3	1.5	1.2	1.1	0.0	1.2	1.5
26	1.3	0.6	3.5	0.6	1.2	0.0	1.7	1.0
27	1.2	0.4	1.5	0.7	2.0	0.0	1.1	1.2
28	0.5	2.1	1.3	1.3	2.4	0.0	0.6	2.1
29	0.9	2.6	1.3	3.2	2.6	0.0	1.3	2.0
30	1.4	2.5	1.8	3.6	2.7	0.0	1.3	1.5
31	1.6	2.8	2.5	3.5	2.7	0.0	1.6	2.0
32	2.4	2.4	1.8	3.9	1.8	0.0	1.1	2.5
33	3.1	1.1	2.1	3.8	2.0	0.0	0.9	2.5
34	3.0	1.6	2.3	3.8	1.7	0.0	0.7	2.7
35	3.	3.1	2.6	3.3	1.5	0.0	0.7	2.8
36	3.4	4.2	2.8	3.4	1.8	0.0	1.1	3.0
37	2.6	4.2	2.8	3.5	2.0	0.0	1.4	2.5
38	2.1	4.1	3.3	3.6	2.0	0.0	1.8	2.3
39	2.0	3.8	-	-	-	0.0	-	2.2
40	2.9	3.5	-	-	-	0.0	-	2.3
AL	2.5	3.5	2.4	2.7	2.4	0.0	0.3	2.3
OASPL	1.3	2.2	0.5	0.9	0.8	0.0	1.2	1.6
PNL	2.4	3.3	2.7	2.6	2.4	0.0	0.3	2.3
PNLT	2.7	3.2	2.7	2.6	2.4	0.0	0.4	2.3

BANDS 14 TO 40 - STANDARD 1/3 OCTAVE BANDS 25 TO 10KHz

* - UNWEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

** - A-WEIGHTED ENERGY AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

*** - UNWEIGHTED ARITHMETIC AVERAGE OF MEASURED LEVELS OVER 360 DEGREES

**** - 32 SECOND AVERGING TIME

FIGURE E.7

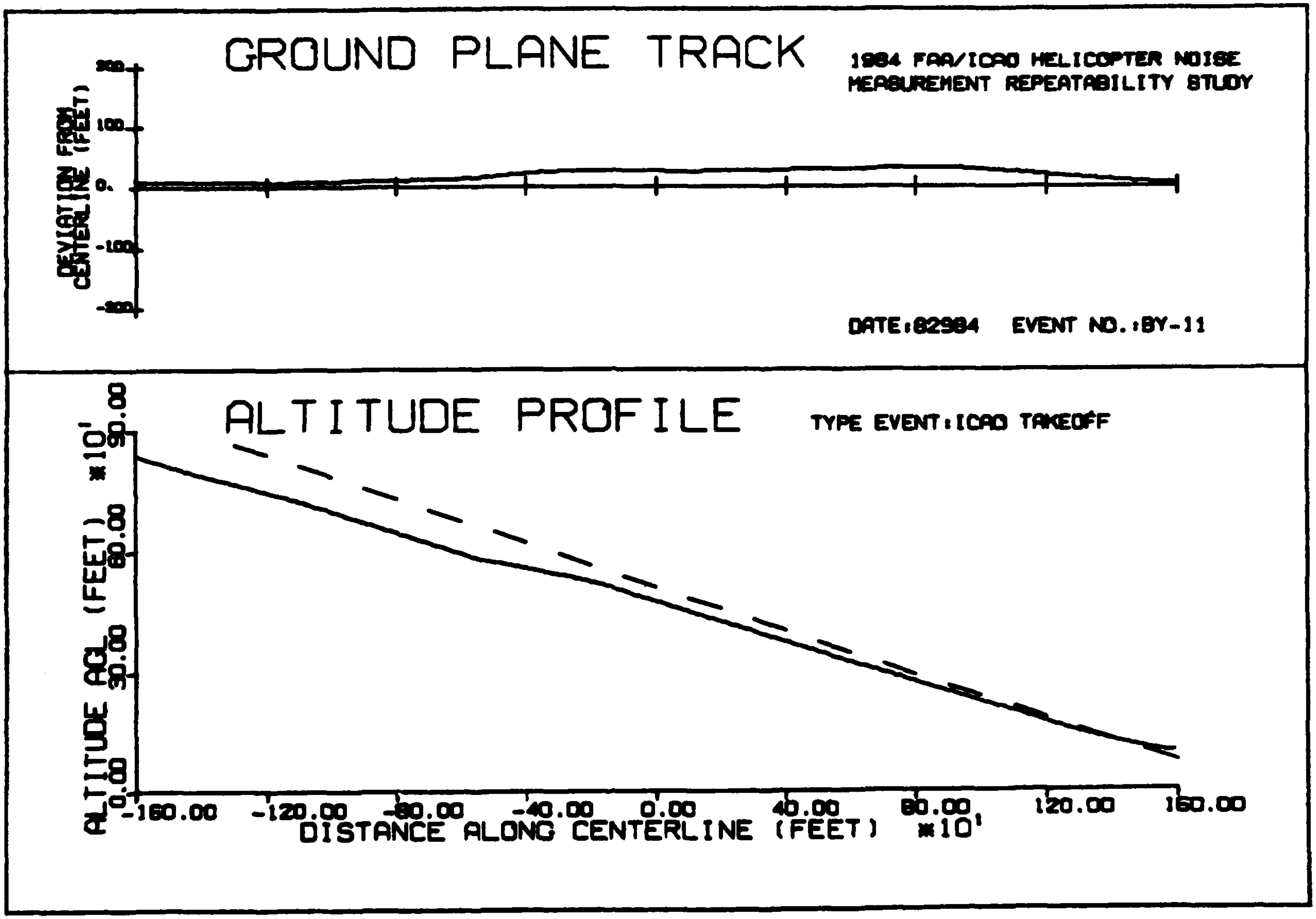

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82984 EVENT NO.:BY-11
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.8

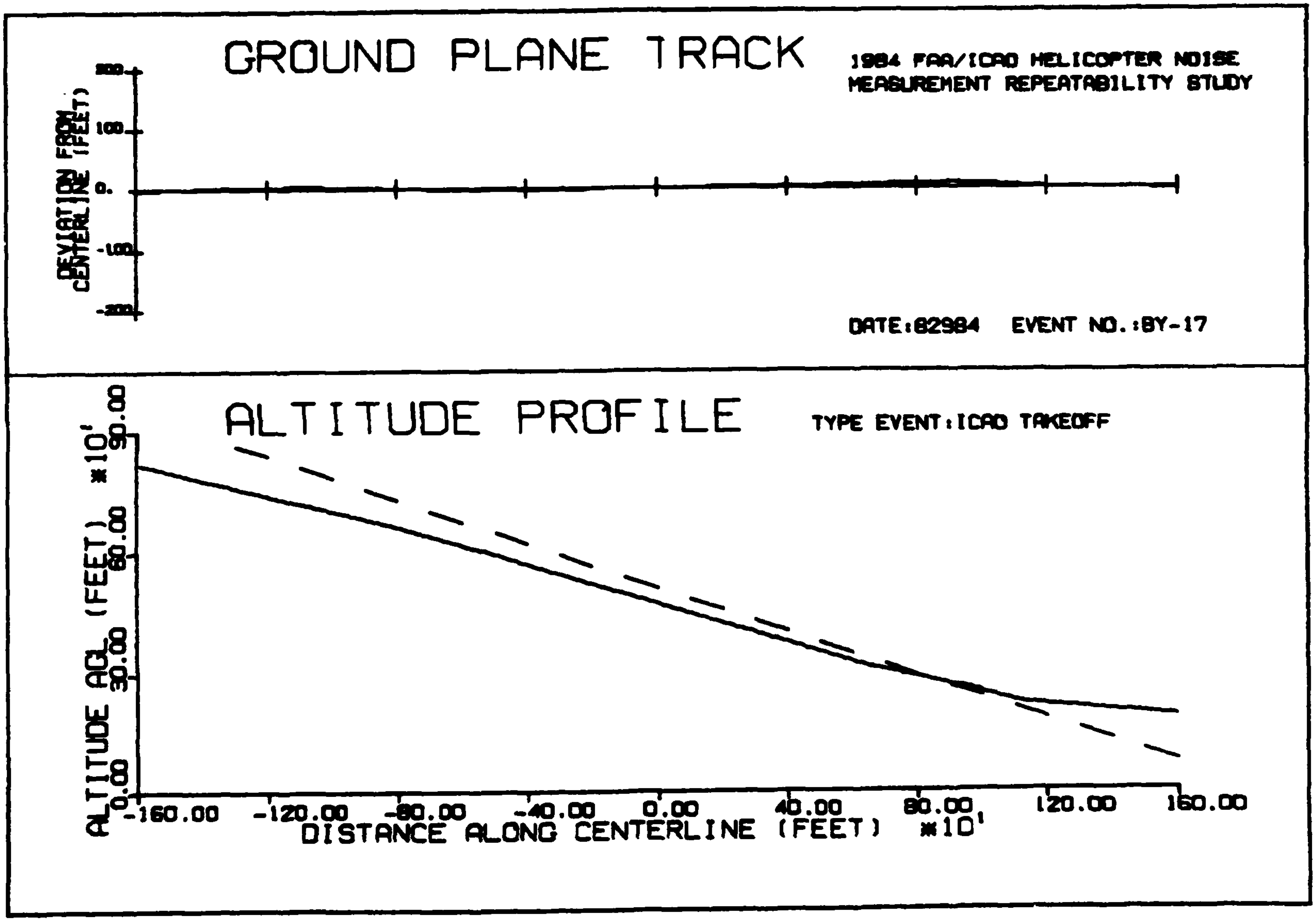

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82984 EVENT NO.:BY-17
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10'
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10'

FIGURE E.9

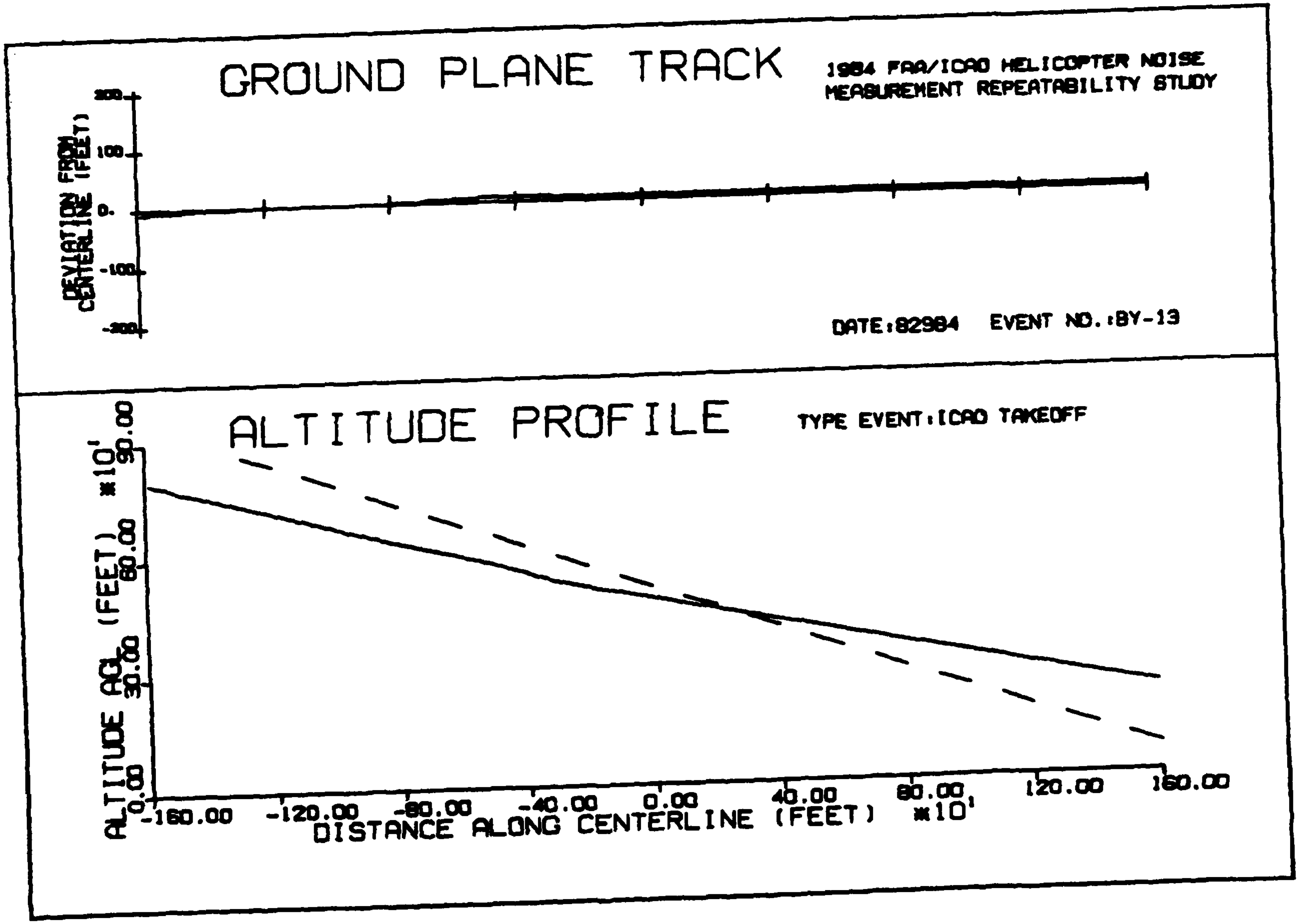
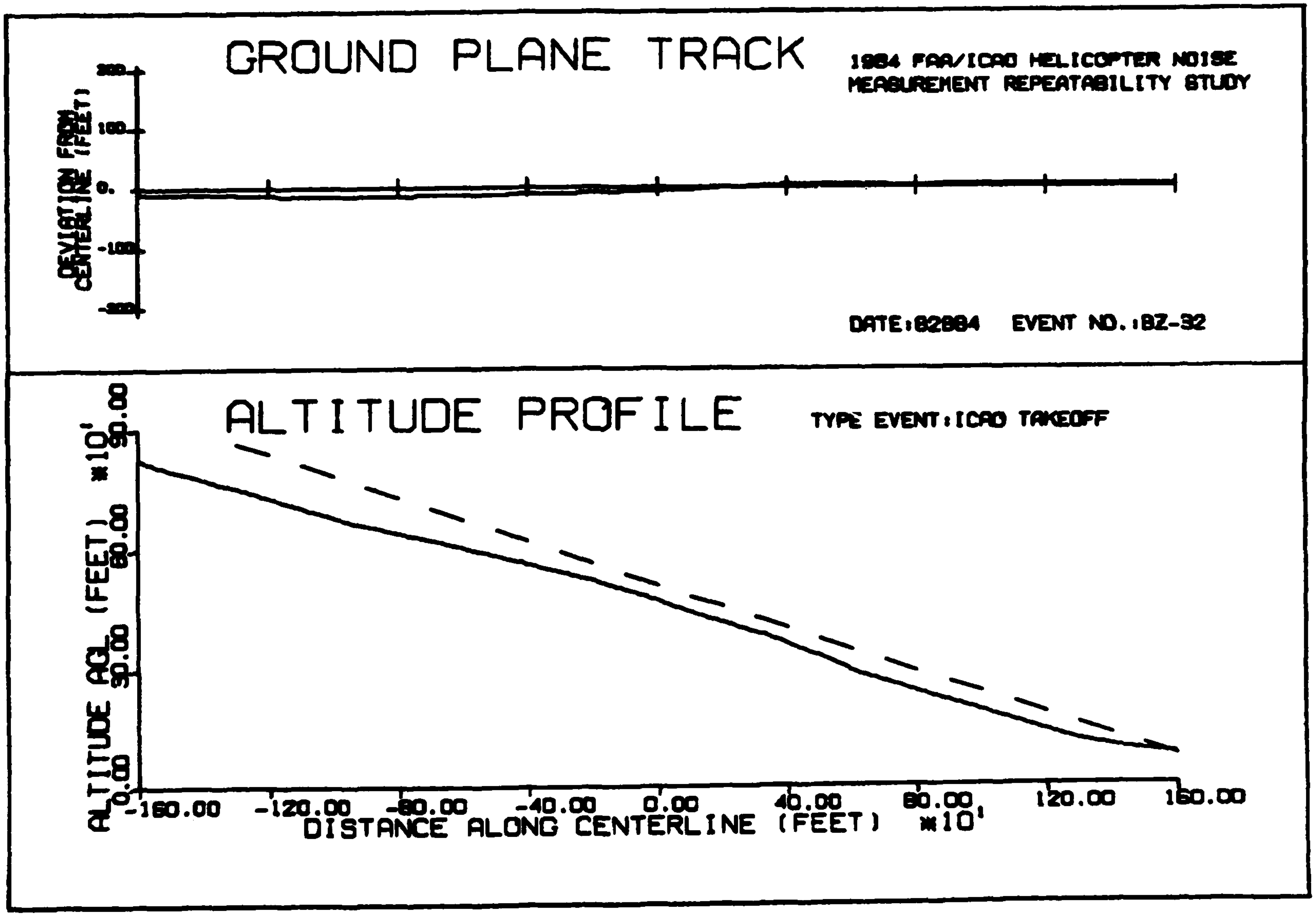

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82984
EVENT NO.:BY-13
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
0.00
30.00
60.00
90.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.10



GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82884
EVENT NO.:BZ-32
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
0.00
30.00
60.00
90.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.11

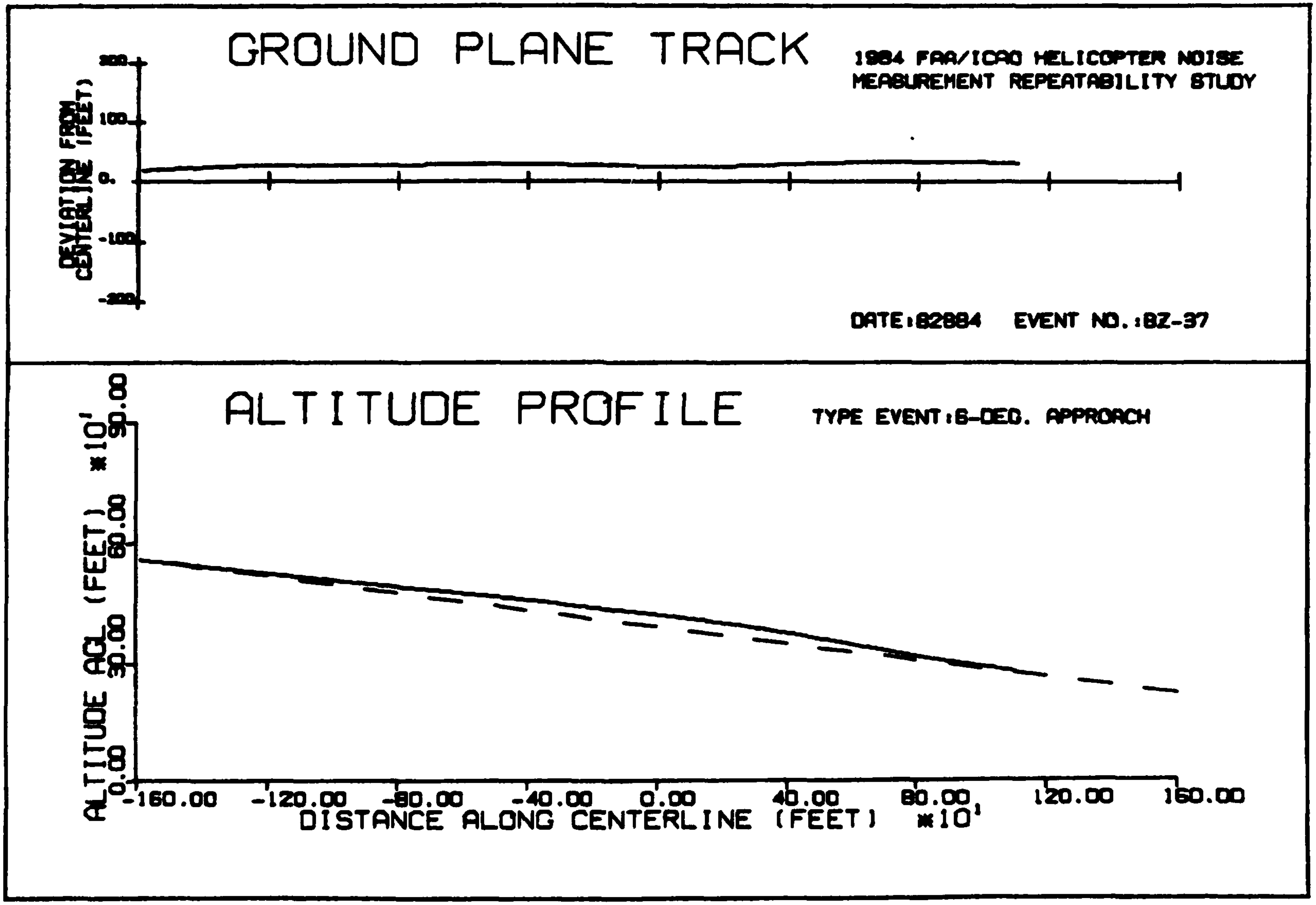
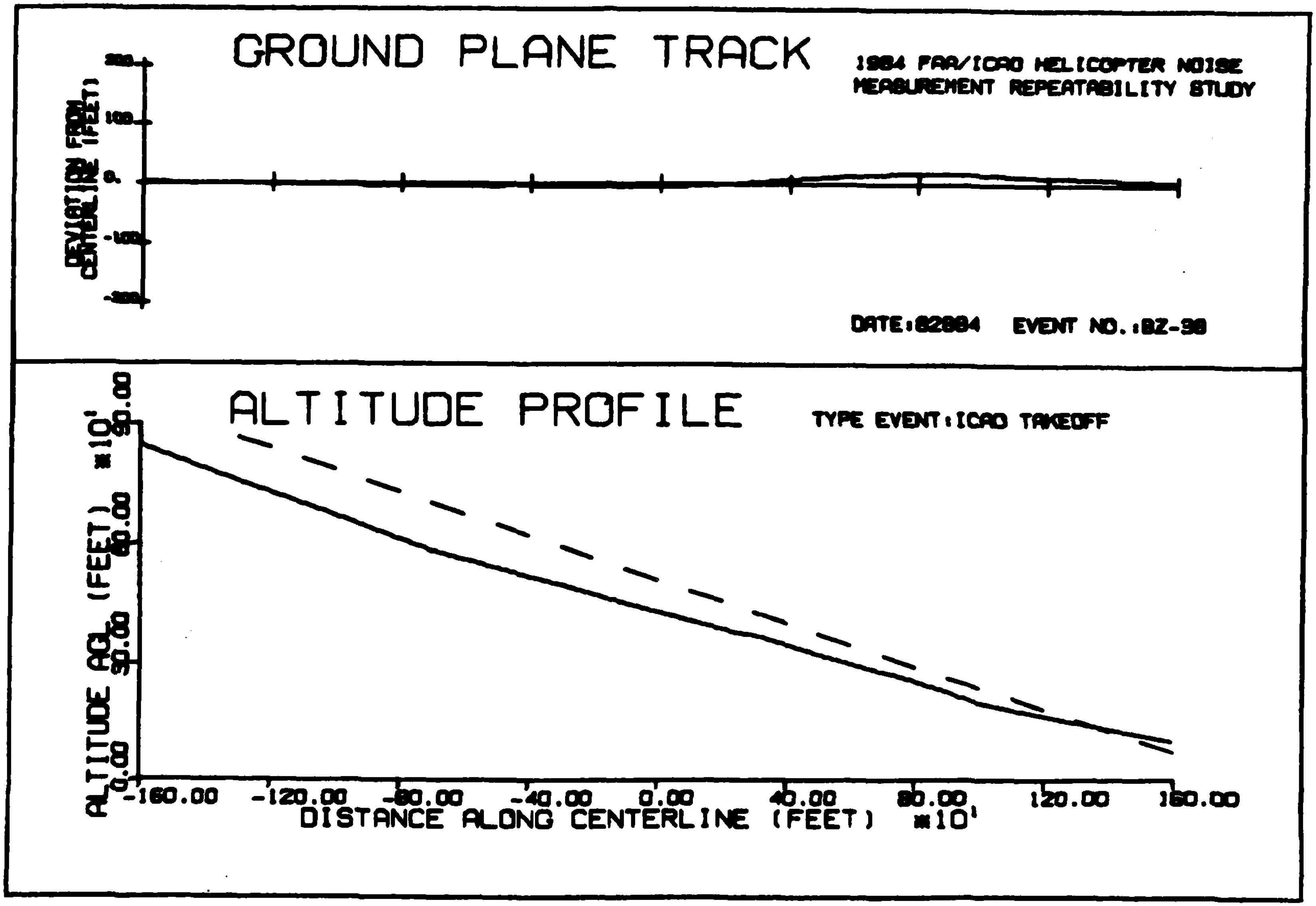
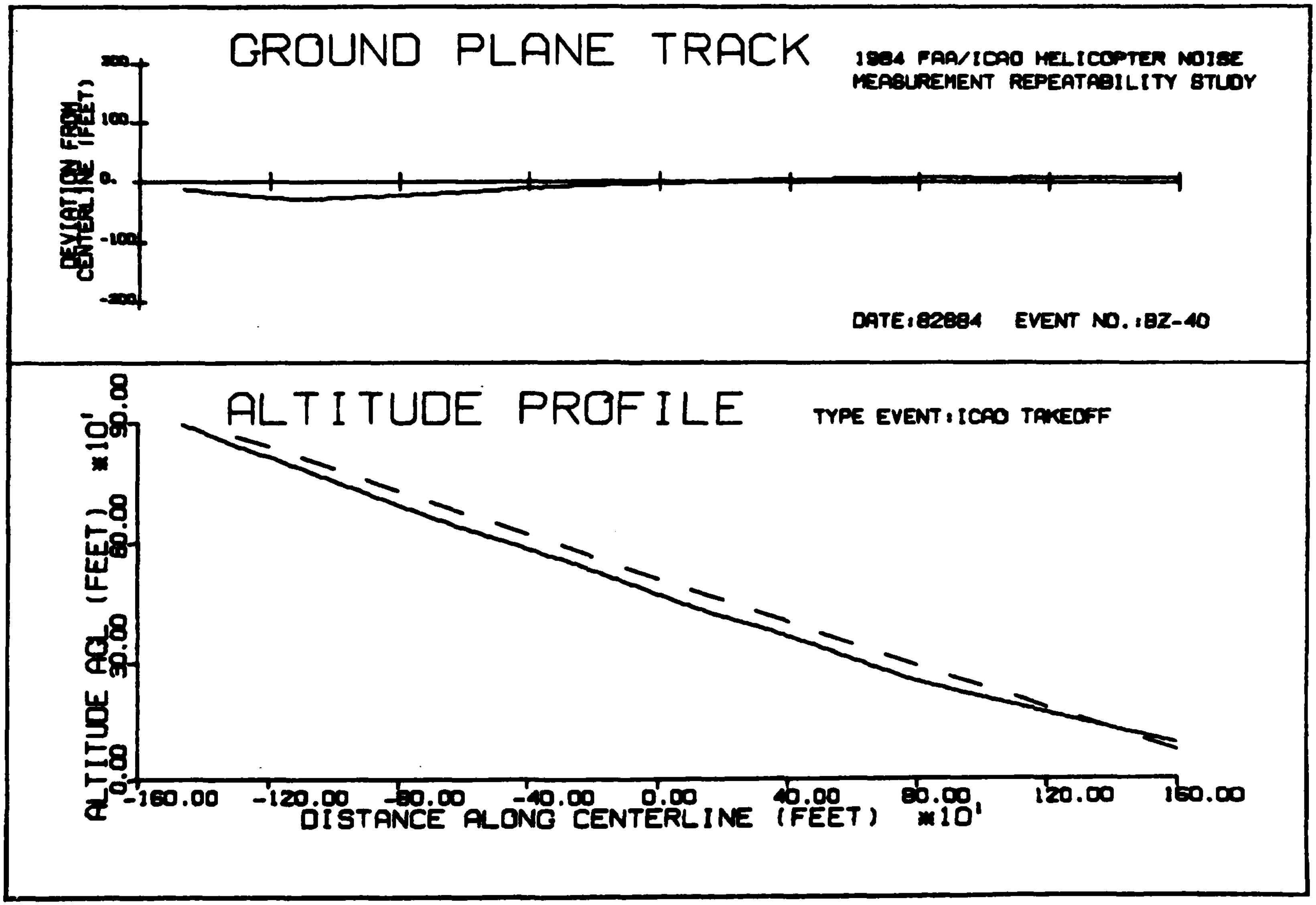

GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82884 EVENT NO.:BZ-37
ALTITUDE PROFILE
TYPE EVENT:6-DEG. APPROACH
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

FIGURE E.12



GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82884
EVENT NO.:BZ-38
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) ×10¹
0.00
30.00
60.00
90.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) ×10¹

FIGURE E.13



GROUND PLANE TRACK
1984 FAA/ICAO HELICOPTER NOISE
MEASUREMENT REPEATABILITY STUDY
DEVIATION FROM CENTERLINE (FEET)
200.
100.
0.
-100.
-200.
DATE:82884 EVENT NO.:BZ-40
ALTITUDE PROFILE
TYPE EVENT:ICAO TAKEOFF
ALTITUDE AGL (FEET) *10¹
90.00
60.00
30.00
0.00
-160.00
-120.00
-80.00
-40.00
0.00
40.00
80.00
120.00
160.00
DISTANCE ALONG CENTERLINE (FEET) *10¹

APPENDIX F

Tracking Data

This appendix summarizes photo-altitude, radar and laser tracking information used in the data reduction process. Detailed information on trajectory data reduction can be found in Section 7.0 of this report.

The tables of this appendix provide the following data:

Time at $PNLT_M$	The time of the Tone Corrected Perceived Maximum Noise Level.
Time radiated	The time the measurement was taken.
CPA test	Actual Closest Point of Approach (in feet).
SR test	Actual Slant Range (in feet).
CPA ref	Reference Closest Point of Approach (in feet).
SR ref	Reference Slant Range (in feet).
Speed	Expressed in knots.
Flag	Source of data:
	1 = Laser
	2 = Radar
	3 = Photo Adjusted Radar

The tables are ordered chronologically by test day, further subdivided alphabetically by series name and then organized numerically by microphone position number.

TABLE F.1

TEST DATE: 8-27-84

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
A1	8:35:08.75	8:35:08.20	420.1	511.91	492.12	599.67	116.9	3
A2	8:35:48.25	NA	NA	NA	492.12	NA	NA	NA
A3	8:41:09.25	8:41:08.70	NA	NA	492.12	NA	NA	NA
A4	8:44:09.75	NA	NA	NA	492.12	NA	NA	NA
A5	8:46:40.75	8:46:40.20	428.9	518.44	492.12	594.86	111	3
A6	8:49:11.75	NA	NA	NA	492.12	NA	NA	NA
A7	8:51:59:25	8:51:58.70	428.4	471.42	492.12	541.54	112.7	3
A8	8:55:17.25	NA	NA	NA	492.12	NA	NA	NA

TABLE F.2

TEST DATE: 8-27-84

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
A1	8:35:08.25	8:35:07.50	647	813.29	695.96	874.83	118.1	3
A2	8:38:49.25	NA	NA	NA	695.96	NA	NA	NA
A3	NA	NA	NA	NA	695.96	NA	NA	NA
A4	8:44:10.25	NA	NA	NA	695.96	NA	NA	NA
A5	8:46:41.75	8:46:41.10	652.7	687.93	695.96	733.52	115.6	3
A6	8:49:12.25	NA	NA	NA	695.96	NA	NA	NA
A7	8:51:59.25	8:51:58.50	652.4	723.06	695.96	771.34	115.3	3
A8	8:55:17:75	NA	NA	NA	695.96	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.3

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
A1	8:35:09.25	8:35:08.60	647	692.77	695.96	74[illegible] 19	117.7	3
A2	8:38:48.25	NA	NA	NA	695.96	NA	NA	NA
A3	NA	NA	NA	NA	695.96	NA	NA	NA
A4	8:44:09.75	NA	NA	NA	695.96	NA	NA	NA
A5	8:46:41.75	8:46:41.10	652.7	675.06	695.96	719.80	116.5	3
A6	8:49:11.25	NA	NA	NA	695.96	NA	NA	NA
A7	8:51:59.75	8:51:59.10	652.4	665.91	695.96	710.37	111.1	3
A8	8:55:16.75	NA	NA	NA	695.96	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.4

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
A-1	8:35:10.75	8:35:10.2	431	568.78	492.12	649.44	112.1	3
A-2	8:38:45.25	NA	NA	NA	492.12	NA	NA	NA
A-3	NA	NA	NA	NA	492.12	NA	NA	NA
A-4	8:44:06.25	NA	NA	NA	492.12	NA	NA	NA
A-5	8:46:43.25	8:46:42.7	421.1	512.8	492.12	599.29	118.1	3
A-6	8:49:08.25	NA	NA	NA	492.12	NA	NA	NA
A-7	8:52:01.25	8:52:00.6	426.3	527.83	492.12	609.32	111.8	3
A-8	8:55:14.25	NA	NA	NA	492.12	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.5

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
A1	8:35:05.75	8:46:38.2	408.9	557.3	492.12	670.72	116.2	3
A2	8:38:50.25	NA	NA	NA	492.12	NA	NA	NA
A3	NA	NA	NA	NA	492.12	NA	NA	NA
A4	8:44:11.25	NA	NA	NA	492.12	NA	NA	NA
A5	8:46:38.25	8:46:37.7	438.53	562.31	492.12	631.03	115.2	3
A6	8:49:13.75	NA	NA	NA	492.12	NA	NA	NA
A7	8:51:56.25	8:51:55.6	436.98	631.27	492.12	710.93	112.4	3
A8	8:55:19.25	NA	NA	NA	492.12	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.6

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
B33	11:29:43.75	11:29:43.34	410.9	411.2	495.04	495.40	54.2	1
B35	NA	NA	NA	NA	495.04	NA	NA	NA
B37	11:52:41.25	11:52:40.90	390.56	391.89	495.04	496.72	48.8	3
B39	11:59:18.25	11:59:17.87	461.4	478 [illegible]	495.04	513.06	49.4	1
B41	12:06:08.75	12:06:08:30	393.1	409.5	495.04	515.69	50	1
B43	12:12:35.25	12:12:34.85	452.3	477.4	495.04	522.51	55	1
B45	12:21:53.75	12:21:53.33	428.2	459.5	495.04	531.23	49.3	1
B47	12:28:25.75	12:28:25.30	426.46	428.75	495.04	497.69	46.6	3
B49	12:34:12.75	12:34:12.38	407.3	408.9	495.04	496.98	51.8	1
B51	NA	NA	NA	NA	495.04	NA	NA	NA
B52	12:47:08.75	12:47:08.15	414	416.5	495.04	498.03	51.4	1

TEST DATE: 8-27-84 TABLE F.7

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
B33	11:29:43.75	11:29:43.14	631.1	632.8	698.03	699.91	54.2	1
B35	NA	NA	NA	NA	698.03	NA	NA	NA
B37	11:52:41.25	11:52:40.60	635.3	648.46	698.03	712.49	49.1	3
B39	11:59:19.25	11:59:18.67	672	674.7	698.03	700.83	49	1
B41	12:06:09.25	12:06:08.70	619.4	626	698.03	705.47	50.1	1
B43	12:12:34.75	12:12:34.15	668.2	698.14	698.03	729.31	48.7	3
B45	12:21:56.75	12:21:56.13	653.3	655.7	698.03	700.59	50.6	1
B47	12:28:26.25	12:28:25.60	666.6	682.75	698.03	714.94	45	3
B49	12:34:13.75	12:34:13.18	630	632.5	698.03	700.80	51.4	1
B51	NA	NA	NA	NA	698.03	NA	NA	NA
B52	12:47:08.25	12:47:07.65	634.7	639.4	698.03	703.20	51.2	1

TEST DATE: 8-27-84 TABLE F.8

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
B33	11:29:43.75	11:29:43.14	648.8	648.9	698.03	698.14	54.2	1
B35	NA	NA	NA	NA	698.03	NA	NA	NA
B37	11:53:12.75	NA	NA	NA	698.03	NA	NA	NA
B39	11:59:19.75	11:59:19.17	675.3	675.6	698.03	698.34	48.9	1
B41	12:06:12.25	12:06:12.20	638.3	67P 7	698.03	742.21	50.9	1
B43	12:12:34.25	12:12:33.60	668.2	689.29	698.03	720.06	49.8	3
B45	12:21:55.75	12:21:55.13	649.3	649.3	698.03	698.03	50.3	1
B47	12:28:25.75	12:28:25.10	666.6	679.87	698.03	711.93	47.5	3
B49	12:34:13.25	12:34:12.68	645.5	645.8	698.03	698.35	51.7	1
B51	NA	NA	NA	NA	698.03	NA	NA	NA
B52	12:47:09.75	12:47:09.15	649.5	650.6	698.03	699.21	52.2	1

TEST DATE: 8-27-84

TABLE F.9

OPERATION: ICAO TAKEOFF, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
B-33	11:29:48.25	11:29:47.47	544.2	546.9	624.56	627.66	56.2	1
B-35	NA	NA	630	NA	624.56	NA	NA	NA
B-37	11:52:46.75	11:52:46.30	507.35	524.61	624.56	645.82	50.8	3
B-39	11:59:25.25	11:59:24.77	609.9	611	624.56	625.69	49.1	1
B-41	12:06:14.75	12:06:14.20	533.6	537.6	624.56	629.24	50.8	1
B-43	12:12:39.75	12:12:39.25	560.2	580.6	624.56	647.30	58.6	1
B-45	12:21:59.25	12:21:58.73	566.4	581.3	624.56	640.99	50.2	1
B-47	12:28:30.75	12:28:30.28	579.1	585.6	624.56	631.57	45.4	1
B-49	12:34:17.75	12:34:17.20	545.9	549.6	624.56	628.79	49.2	2
B-51	NA	NA	558.2	NA	624.56	NA	NA	NA
B-52	12:47:13.75	12:47:13.25	535.7	539.5	624.56	628.99	52.9	1

TEST DATE: 8-27-84

TABLE F.10

OPERATION: ICAO TAKEOFF, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
B-33	11:29:38.75	11:29:38.45	287.9	287.9	365.51	365.51	56.9	
B-35	NA	NA	630	NA	624.56	NA	NA	NA
B-37	11:52:46.75	11:52:46.30	507.35	524.61	624.56	645.82	50.8	3
B-39	11:59:25.25	11:59:24.77	609.9	611	624.56	625.69	49.1	1
B-41	12:06:14.75	12:06:14.20	533.6	537.6	624.56	629.24	50.8	1
B-43	12:12:39.75	12:12:39.25	560.2	580.6	624.56	647.30	58.6	1
E-45	12:21:59.25	12:21:58.73	566.4	581.3	624.56	640.99	50.2	1
B-47	12:28:30.75	12:28:30.28	579.1	585.6	624.56	631.57	45.4	1
B-49	12:34:17.75	12:34:17.20	545.9	549.6	624.56	628.79	49.2	2
B-51	NA	NA	558.2	NA	624.56	NA	NA	NA
B-52	12:47:13.75	12:47:13.25	535.7	539.5	624.56	628.99	52.9	1

TEST DATE: 8-27-84 TABLE F.11

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
C32	11:26:48.75	11:26:48.36	406.6	479.9	391.53	462.11	61.7	1
C34	11:33:48.25	NA	NA	NA	391.53	NA	NA	NA
C36	11:41:28.25	11:41:27.89	385.6	458.7	391.53	465.75	58	1
C38	11:56:02.75	11:56:02.30	402.94	474.62	391.53	461.18	54.9	3
C40	12:03:02.75	12:03:02.10	394.97	583.81	391.53	578.73	60.5	3
C42	12:09:33.75	12:09:33.00	378.78	701.76	391.53	725.38	55.3	3
C44	12:16:13.25	12:16:12.90	374.48	376.57	391.53	393.71	53.3	3
C46	12:25:22.25	12:25:21.87	409.4	482.3	391.53	461.25	56.9	1
C48	12:31:21.25	12:31:20.87	398.3	404.8	391.53	397.92	58.5	1
C50	12:39:39.75	12:39:39.37	399.6	447.2	391.53	438.17	59.5	1

TEST DATE: 8-27-84 TABLE F.12

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
C32	11:26:48.75	11:26:48.16	649.1	706.6	628.87	684.58	61.8	1
C34	11:33:49.25	11:33:48.6	642.2	753.76	628.87	738.11	59.2	3
C36	11:41:28.75	11:41:28.19	631.4	666.7	628.87	664.03	57.9	1
C38	11:56:06.75	11:56:06.10	637.1	650.65	628.87	642.24	55.2	3
C40	12:03:04.75	12:03:04.10	634.1	695.26	628.87	689.53	57.8	3
C42	12:09:40.75	12:09:40.20	621.2	624.89	628.87	632.61	55.5	3
C44	12:16:08.75	12:16:08.13	602.3	734.8	628.87	767.22	55.5	1
C46	12:25:23.75	12:25:23.17	634.6	643.3	628.87	637.49	56.9	1
C48	12:31:22.25	12:31:21.67	636.9	656.2	628.87	647.93	58.8	1
C50	12:39:39.75	12:39:39.17	617.6	656	628.87	667.97	59.5	1

TEST DATE: 8-28-84 TABLE F.39

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AA-1	NA	NA	NA	NA	492.12	NA	NA	NA
AA-2	8:22:12.25	8:22:11.86	453	453.1	492.12	492.23	112.2	1
AA-3	8:24:29.25	8:24:28.70	437.25	622.03	492.12	700.09	114.4	2
AA-4	NA	NA	430.3	NA	492.12	NA	NA	NA
AA-5	8:29:29.75	8:29:29.31	457.5	544.3	492.12	585.49	140	1
AA-6	8:31:57.25	8:31:56.60	464.1	664.88	492.12	705.03	113.4	3
AA-7	8:34:26.25	8:34:25.82	459.9	510.1	492.12	545.84	114.1	1
AA-8	8:36:45.25	8:36:44.84	418.9	509.3	492.12	598.32	116.1	1

TEST DATE: 8-28-84 TABLE F.40

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AA-1	NA	NA	NA	NA	492.12	NA	NA	NA
AA-2	8:22:05.75	8:22:05.10	384.4	573.7	492.12	734.47	117	3
AA-3	8:24:34.25	8:24:33.83	424.7	517.6	492.12	599.77	114.8	1
AA-4	NA	NA	446.5	NA	492.12	NA	NA	NA
AA-5	8:29:34.75	8:29:34.20	387.9	554.23	492.12	703.14	113.3	3
AA-6	8:31:52.25	NA	NA	NA	492.12	NA	NA	NA
AA-7	8:34:31.25	8:34:30.82	460.7	526.4	492.12	562.30	113.8	1
AA-8	8:36:40.25	8:36:39.54	436.9	548.9	492.12	618.28	115	1

TEST DATE: 8-28-84 TABLE F.37

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AA-1	8:19:49.25	NA	NA	NA	695.96	NA	NA	NA
AA-2	8:22:08.25	8:22:07.66	693.7	751.7	695.96	754.15	112	1
AA-3	8:24:33.25	8:24:32.60	641.6	656.68	695.96	712.32	115	3
AA-4	NA	NA	NA	NA	695.96	NA	NA	NA
AA-5	8:29:33.75	8:29:33.10	659.6	674.01	695.96	711.16	111.9	3
AA-6	8:31:54.75	8:31:53.90	658.9	822.24	695.96	868.49	114.8	3
AA-7	8:34:30.25	8:34:29.62	643.6	643.6	695.96	695.96	113.9	1
AA-8	8:36:43.25	8:36:42.64	648.9	686.9	695.96	736.72	115.7	1

TEST DATE: 8-28-84 TABLE F.38

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AA1	NA	NA	NA	NA	695.96	NA	NA	NA
AA2	8:22:09.25	8:22:08.66	628.5	641.5	695.96	710.36	112	1
AA3	8:24:31.75	8:24:31.00	641.6	780.8	695.96	846.95	116.4	3
AA4	NA	NA	NA	NA	695.96	NA	NA	NA
AA5	8:29:32.75	8:29:32.10	659.6	755.83	695.96	797.49	110.7	3
AA6	8:31:54.75	8:31:54.00	658.9	853.71	695.96	901.73	114.8	3
AA7	8:34:29.25	8:34:28.62	693.1	716.9	695.96	719.86	114.1	1
AA8	8:36:43.75	8:36:43.14	650.8	663.7	695.96	709.76	115.8	1

TABLE F.35

TEST DATE: 8-27-84

OPERATION: 492 FT/150 M FLYOVER (0.7*VH), TARGET IAS= 91 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
J-27	10:58:33.75	10:58:32.10	487	699.31	492.12	706.66	89.4	3
J-28	11:05:18.25	NA	NA	NA	492.12	NA	NA	NA
J-29	11:07:33.75	11:07:33.20	474.5	626.8	492.12	650.08	86.7	3
J-30	11:10:10.75	11:10:10.00	494.1	908.64	492.12	905	90.8	3
J-31	11:12:31.25	11:12:30.60	486.3	731.13	492.12	739.88	90.9	3

TABLE F.36

TEST DATE: 8-28-84

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AA-1	NA	NA	NA	NA	492.12	NA	NA	NA
AA-2	8:22:08.25	8:22:07.86	444.4	517.7	492.12	573.29	112	1
AA-3	8:24:31.75	8:24:31.20	411.8	546.66	492.12	653.29	117.1	3
AA-4	NA	NA	NA	NA	492.12	NA	NA	NA
AA-5	8:29:32.25	8:29:31.70	439.4	581.36	492.12	651.11	110.2	3
AA-6	8:31:54.75	8:31:54.75	438.3	628.25	492.12	705.39	115.6	3
AA-7	8:34:28.75	8:34:28.32	454.4	516.3	492.12	559.16	114.1	1
AA-8	8:36:42.75	8:36:42.14	425.9	535.7	492.12	618.99	115.5	1

TEST DATE: 8-27-84 TABLE F.33

OPERATION: 492 FT/150 M FLYOVER(0.7*VH), TARGET IAS=91 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PMLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
J-27	10:58:38.25	10:58:38.3	690	704.73	695.96	710.82	89.4	3
J-28	11:05:16.75	NA	NA	NA	695.96	NA	NA	NA
J-29	11:07:37.75	11:07:37.0	678.8	766.07	695.96	785.43	88.5	3
J-30	11:10:10.75	11:10:10.1	692.5	719.01	695.96	722.6	90.9	3
J-31	11:12:34.25	11:12:33.4	694.6	901.81	695.96	903.57	89.5	3

TEST DATE: 8-27-84 TABLE F.34

OPERATION: 492 FT/150 M FLYOVER (0.7*VH), TARGET IAS= 91 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PMLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
J-27	10:58:37.75	10:58:36.90	480.6	867.1	492.12	887.88	87.6	3
J-28	11:05:11.25	NA	NA	NA	492.12	NA	NA	NA
J-29	11:07:39.25	11:07:39.25	460.9	722.22	492.12	771.14	93	3
J-30	11:10:06.25	11:10:05.70	480.6	638.68	492.12	653.99	89.8	3
J-31	11:12:37.25	11:12:37.25	494.3	782.08	492.12	778.63	87.6	3

TABLE F.31

TEST DATE: 8-27-84

OPERATION: 492 FT/150 M FLYOVER(0.7*VH), TARGET IAS=91 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
J-27	NA	NA	NA	NA	492.12	NA	NA	NA
J-28	11:05:15.75	NA	NA	NA	492.12	NA	NA	NA
J-29	11:07:36.75	11:07:36.7	467.7	640.55	492.12	673.99	87.7	3
J-30	11:10:09.25	11:10:08.6	487.4	664.14	492.12	670.58	90.1	3
J-31	11:12:34.75	11:12:34.1	490.3	684.55	492.12	687.09	89.2	3

TABLE F.32

TEST DATE: 8-27-84

OPERATION: 492 FT/150 M FLYOVER(0.7*VH), TARGET IAS=91 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
J-27	10:57:42.25	NA	NA	NA	695.96	NA	NA	NA
J-28	11:05:17.25	NA	NA	NA	695.96	NA	NA	NA
J-29	11:07:37.75	11.07:37.0	678.8	759.2	695.96	778.39	88.3	3
J-30	11:10:10.25	11:10:09.6	692.5	763.49	695.96	767.3	90	3
J-31	11:12:34.75	11:12:34.0	694.1	890.2	695.96	892.59	89.6	3

TEST DATE: 8-27-84

TABLE F.29

OPERATION: 492 FT/150 M FLYOVER (0.8*VH), TARGET IAS=104 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
I-22	9:53:46.25	9:53:45.7	463.1	557.08	492.12	591.98	100.5	3
I-23	NA	NA	NA	NA	492.12	NA	NA	NA
I-24	10:01:22.25	10:01:21.8	488.2	526.44	492.12	530.67	98.6	3
I-25	10:03:46.25	10:03:45.7	456	580.52	492.12	626.5	98.4	3
I-26	10:06:13.25	10:06:12.7	441.5	514.88	492.12	573.91	99.7	3

TEST DATE: 8-27-84

TABLE F.30

OPERATION: 492 FT/150 M FLYOVER (0.8*VH), TARGET IAS=104 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
I-22	9:53:52.25	9:53:51.70	472.8	583.12	492.12	606.94	99.5	3
I-23	NA	NA	NA	NA	492.12	NA	NA	NA
I-24	10:01:28.75	10:01:28.30	490.4	502.18	492.12	503.94	99.5	3
I-25	10:03:40.25	10:03:39.70	476.2	630.83	492.12	651.92	103.8	3
I-26	10:06:18.75	10:06:18.20	459	544.22	492.12	583.49	111.1	3

TEST DATE: 8-27-84

TABLE F.27

OPERATION: 492 FT/150 M FLYOVER (0.8*VH), TARGET IAS=104 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
I-22	9:53:50.75	9:53:50.10	679	687.46	695.96	704.63	99.1	3
I-23	NA	NA	NA	NA	695.96	NA	NA	NA
I-24	10:01:26.25	10:01:25.70	693.9	699.12	695.96	701.19	99	3
I-25	10:03:44.25	10:03:43.60	677.7	710.11	695.96	729.25	103.9	3
I-26	10:06:13.75	10:06:12.90	667	1265.43	695.96	1320.37	99.8	3

TEST DATE: 8-27-84

TABLE F.28

OPERATION: 492 FT/150 M FLYOVER (0.8*VH), TARGET IAS=104 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
I-22	9:53:50.25	9:53:49.60	679	700.83	695.96	718.34	100.1	3
I-23	NA	NA	NA	NA	695.96	NA	NA	NA
I-24	10:01:25.25	10:01:24.50	693.9	718.91	695.96	721.04	98.6	3
I-25	10:03:43.75	10:03:43.10	677.7	750.61	695.96	770.83	102	3
I-26	NA	NA	NA	NA	695.96	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.25

OPERATION: 492 FT/150 M FLYOVER (1.0*VH), TARGET IAS=130 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
H-17	9:35:58.25	9:35:57.70	493.1	591.94	492.12	590.76	120.8	3
H-18	9:39:37.75	9:39:37.30	423.5	526.4	492.12	611.69	125.1	3
H-19	9:42:16.25	9:42:15.70	441.8	572.75	492.12	637.99	125.2	3
H-20	9:46:46.25	9:46:45.80	430.9	533.14	492.12	608.89	126.1	3
H-21	9:50:33.25	9:50:32.70	466.9	614.95	492.12	648.16	125.1	3

TEST DATE: 8-27-84

TABLE F.26

OPERATION: 492 FT/150 M FLYOVER (0.8*VH), TARGET IAS=104 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
I-22	9:53:49.25	9:53:48.70	467.9	573.98	492.12	603.69	98.5	3
I-23	NA	NA	NA	NA	492.12	NA	NA	NA
I-24	10:01:24.25	10:01:23.60	489.3	632.79	492.12	636.44	99.1	3
I-25	10:[illegible] 42.75	10:03:42.10	466.1	677.23	492.12	715.04	98.4	3
I-26	1[illegible] 16.25	10:06:15.70	450.3	530.26	492.12	579.51	98.2	3

TEST DATE: 8-27-84

TABLE F.23

OPERATION: 492 FT/150 M FLYOVER (1.0*VH), TARGET IAS=130 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
H-17	9:36:01.25	9:36:00.60	696.4	759.26	695.96	758.78	119.4	3
H-18	9:39:36.25	9:39:35.60	641.8	680.39	695.96	737.81	126.1	3
H-19	9:42:19.25	9:42:18.60	662.8	703.26	695.96	738.44	124.5	3
H-20	9:46:44.75	9:46:44.10	650.4	674.6	695.96	721.86	124.4	3
H-21	9:50:36.25	9:50:35.60	682.4	745.6	695.96	760.43	120.6	3

TEST DATE: 8-27-84

TABLE F.24

OPERATION: 492 FT/150 M FLYOVER (1.0*VH), TARGET IAS=130 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
H-17	9:36:02.75	9:36:02.10	492.7	639.84	492.12	639.09	122	3
H-18	9:39:33.25	NA	NA	NA	492.12	NA	NA	NA
H-19	9:42:20.75	9:42:20.20	446.3	598.74	492.12	660.21	125.2	3
H-20	9:46:41.75	9:46:41.30	419.9	493.23	492.12	578.06	125.4	3
H-21	9:50:39.25	9:50:39.25	478.7	496.77	492.12	510.7	119.8	3

TEST DATE: 8-27-84

TABLE F.21

OPERATION: 492 FT/150 M FLYOVER (1.0*VH), TARGET IAS=130 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
H-17	9:36:00.75	9:36:00.10	481.96	598.67	492.12	611.29	126.4	3
H-18	9:39:35.75	9:39:35.30	403.46	479.96	492.12	585.43	125.3	3
H-19	9:42:19.25	9:42:18.70	432.61	490.15	492.12	557.58	124.1	3
H-20	9:46:44.25	9:46:43.80	414.06	496.74	492.12	590.39	123	3
H-21	9:50:36.25	9:50:35.70	472.7	578.7	492.12	602.47	120.6	3

TEST DATE: 8-27-84

TABLE F.22

OPERATION: 492 FT/150 M FLYOVER (1.0*VH), TARGET IAS=130 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
H-17	9:36:01.25	9:36:00.50	696.4	745.11	695.96	744.64	119.4	3
H-18	9:39:36.25	9:39:35.60	641.8	669.87	695.96	726.4	126.7	3
H-19	9:42:19.25	9:42:18.60	662.8	711.97	695.96	747.59	124.5	3
H-20	9:46:43.75	9:46:43.00	650.4	772.13	695.96	826.22	122.3	3
H-21	9:50:36.75	9:50:36.75	682.4	715.48	695.96	729.7	123.3	3

TEST DATE: 8-27-84

TABLE F.19

OPERATION: 984 FT/300 M FLYOVER (0.* VH), TARGET IAS= 117 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
G-9	9:12:58.75	9:12:57.70	979.8	1116.62	984.24	1121.68	111.3	3
G-10	9:15:49.25	9:15:48.30	934.8	1016.44	984.24	1070.2	119.3	3
G-11	9:18:14.75	9:18:13.70	944	1128.16	984.24	1176.25	110.5	3
G-12	NA	NA	NA	NA	984.24	NA	NA	NA
G-13	9:23:12.25	NA	NA	NA	984.24	NA	NA	NA
G-14	9:25:33.75	9:25:32.80	970	1094.46	984.24	1110.53	118.3	3
G-15	9:28:15.25	NA	NA	NA	984.24	NA	NA	NA
G-16	9:30:50.75	NA	NA	NA	984.24	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.20

OPERATION: 984 FT/300 M FLYOVER (0.* VH), TARGET IAS= 117 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
G-9	9:12:58.75	9:12:57.70	1002.4	1178.63	984.24	1157.28	109.6	3
G-10	9:15:49.25	9:15:48.30	1041.7	1133.94	984.24	1071.39	116	3
G-11	9:18:14.75	9:18:13.70	1016.9	1026.8	984.24	993.82	112.9	3
G-12	NA	NA	NA	NA	984.24	NA	NA	NA
G-13	9:23:12.25	NA	NA	NA	984.24	NA	NA	NA
G-14	9:25:33.75	9:25:32.80	1015.9	1118.92	984.24	1084.05	116	3
G-15	9:28:15.25	NA	NA	NA	984.24	NA	NA	NA
G-16	9:30:50.75	NA	NA	NA	984.24	NA	NA	NA

TEST DATE: 8-27-84 TABLE F.17

OPERATION: 984 FT/300 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
G-9	9:12:57.75	9:12:56.25	1106.5	1219.73	1104.4	1217.41	110.9	3
G-10	9:15:50.75	9:15:48.25	1104	1660.39	1104.4	1660.99	120.6	3
G-11	9:18:12.75	9:18:12.25	1096.9	1261.86	1104.4	1270.49	113.2	3
G-12	NA	NA	NA	NA	1104.4	NA	NA	NA
G-13	NA	NA	NA	NA	1104.4	NA	NA	NA
G-14	9:25:36.25	9:25:38.25	1108.2	1111.38	1104.4	1107.57	116	3
G-15	NA	NA	NA	NA	1104.4	NA	NA	NA
G-16	NA	NA	NA	NA	1104.4	NA	NA	NA

TEST DATE: 8-27-84 TABLE F.18

OPERATION: 984 FT/300 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
G-9	9:12:57.75	9:12:55.75	1106.5	1256.91	1104.4	1256.91	109.5	3
G-10	9:15:50.75	9:15:51.25	1104	1233.66	1104.4	1234.11	117.9	3
G-11	NA	NA	NA	NA	NA	NA	NA	NA
G-12	NA	NA	NA	NA	NA	NA	NA	NA
G-13	NA	NA	NA	NA	NA	NA	NA	NA
G-14	9:25:36.25	9:25:36.25	1108.2	1240.28	1104.4	1236.02	117	3
G-15	NA	NA	NA	NA	NA	NA	NA	NA
G-16	NA	NA	NA	NA	NA	NA	NA	NA

TEST DATE: 8-27-84 TABLE F.15

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
C32	11:26:54.25	11:26:53.96	354.1	392.6	340.1	377.08	58.8	1
C34	11:33:54.75	11:33:54.37	350.7	443	340.1	429.61	60.1	1
C36	11:41:33.25	11:41:32.99	328.4	404	340.1	418.39	57.3	1
C38	11:56:10.25	11:56:09.90	358.16	358.48	340.1	340.40	53.5	3
C40	12:03:09.75	12:03:09.30	290.39	358.38	340.1	419.73	58.5	3
C42	12:09:42.25	12:09:41.80	355.73	449.56	340.1	429.81	55.1	3
C44	12:16:18.25	12:16:17.90	338.8	342.39	340.1	343.70	53.9	3
C46	12:25:27.25	12:25:26.80	359.17	457.56	340.1	433.27	56.4	3
C48	12:31:22.75	12:31:22.37	343.6	421.8	340.1	417.50	59.1	1
C50	12:39:44.25	12:39:43.87	356.7	432.5	340.1	412.37	60.4	1

TEST DATE: 8-27-84 TABLE F.16

OPERATION: 984 FT/300 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
G-9	9:12:57.75	9:12:56.80	991.1	1004.71	984.24	997.75	111.6	3
G-10	9:15:50.75	9:15:49.60	988.3	1182.51	984.24	1177.66	118.4	3
G-11	9:18:12.75	9:18:11.70	980.4	1110.91	984.24	1115.26	112.2	3
G-12	NA	NA	NA	NA	984.24	NA	NA	NA
G-13	9:23:14.75	NA	NA	NA	984.24	NA	NA	NA
G-14	9:25:36.25	9:25:35.20	993	1129.33	984.24	1119.36	116.9	3
G-15	9:28:13.25	NA	NA	NA	984.24	NA	NA	NA
G-16	9:30:53.25	NA	NA	NA	984.24	NA	NA	NA

TEST DATE: 8-27-84

TABLE F.13

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
C32	11:26:51.25	11:26:50.66	625.4	625.5	628.87	628.97	60.4	1
C34	11:33:52.25	11:33:51.60	642.2	648.3	628.87	634.84	61.6	3
C36	NA	NA	NA	NA	628.87	NA	NA	NA
C38	NA	NA	NA	NA	628.87	NA	NA	NA
C40	12:03:03.25	12:03:02.50	634.1	776.5	628.87	770.10	58.8	3
C42	12:09:42.25	12:09:41.60	621.2	667.78	628.87	676.03	54.5	3
C44	12:16:15.75	12:16:15.10	619.1	651.07	628.87	661.34	50.5	3
C46	12:25:24.75	12:25:24.17	643.5	645	628.87	630.34	56.9	1
C48	12:31:25.25	12:31:24.50	644	778.08	628.87	759.80	57.9	3
C50	12:39:44.25	12:39:43.67	647.8	685.4	628.87	665.37	60.3	1

TEST DATE: 8-27-84

TABLE F.14

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
C32	11:26:44.75	11:26:44.06	464.6	515.9	442.97	491.88	61.7	2
C34	11:33:44.75	11:33:44.20	458.5	686.46	442.97	663.21	58.7	3
C36	11:41:23.25	11:41:22.89	445.2	504	442.97	501.48	59.8	1
C38	11:55:56.75	11:55:56.26	465.9	551.8	442.97	524.64	55.5	1
C40	12:02:57.25	12:02:56.60	472.87	698.96	442.97	654.76	55.7	3
C42	12:09:30.75	12:09:30.20	404.54	749.5	442.97	820.69	57.5	3
C44	12:16:05.25	12:16:04.83	414.4	486.8	442.97	520.36	55.9	1
C46	12:25:16.25	12:25:15.76	478.7	599.1	442.97	554.38	57.8	1
C48	12:31:11.75	12:31:11.27	484.5	652.8	442.97	596.84	64.6	1
C50	12:39:34.25	12:39:33.70	436.28	499.67	442.97	507.34	58.1	3

TEST DATE: 8-28-84

TABLE F.41

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AZ26	NA	NA	NA	NA	492.12	NA	NA	NA
AZ27	11:28:26.75	11:28:26.20	460.5	583.27	492.12	623.32	113.6	3
AZ28	11:30:51.75	11:30:51.24	485.9	611.9	492.12	619.73	116.8	1
AZ29	11:33:48.75	11:33:48.39	474	529.2	492.12	549.43	114.2	1
AZ30	11:36:21.75	11:36:21.27	497.3	576.6	492.12	570.59	112.8	1

TEST DATE: 8-28-84

TABLE F.42

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AZ26	NA	NA	NA	NA	695.96	NA	NA	NA
AZ27	11:28:27.25	11:28:26.60	673.9	732.74	695.96	756.73	112.9	3
AZ28	11:30:52.75	11:30:52.14	700.9	726.4	695.96	721.28	116.6	1
AZ29	11:33:48.75	11:33:48.00	678.6	815.72	695.96	836.59	113.6	3
AZ30	11:36:22.25	11:36:21.67	697.3	725.2	695.96	723.81	112.9	1

TEST DATE: 8-28-84

TABLE F.43

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AZ26	NA	NA	NA	NA	695.96	NA	NA	NA
AZ27	11:28:26.75	11:28:26.00	673.9	802.08	695.96	828.34	114.3	3
AZ28	11:30:51.75	11:30:51.14	680.1	786.7	695.96	805.05	116.8	1
AZ29	11:33:49.25	11:33:48.69	678.6	704.6	695.96	722.63	114.2	1
AZ30	11:36:22.75	11:36:22.17	699.4	712.8	695.96	709.29	113.1	1

TEST DATE: 8-28-84

TABLE F.44

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AZ-26	11:24:05.25	11:24:04.82	464.6	535.8	492.12	567.54	113.7	1
AZ-27	11:28:23.75	11:28:23.10	501.1	689.35	492.12	676.99	115.6	3
AZ-28	11:30:54.25	11:30:53.74	495.1	621.2	492.12	617.46	116.3	1
AZ-29	11:33:46.25	11:33:45.70	494.2	654.26	492.12	651.51	115	3
AZ-30	11:36:24.25	11:36:23.77	505.3	590.1	492.12	574.71	113.7	1

TEST DATE: 8-28-84

TABLE F.45

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AZ-26	NA	NA	461.2	NA	492.12	NA	NA	NA
AZ-27	11:28:29.25	11:28:28.70	406.56	551.4	492.12	667.44	116.8	3
AZ-28	11:30:49.75	11:30:49.24	481	557	492.12	569.88	116.9	1
AZ-29	11:33:50.75	11:33:50.29	485.3	612.1	492.12	620.70	114.1	1
AZ-30	11:36:19.25	11:36:18.77	494.7	566.8	492.12	563.84	112	1

TEST DATE: 8-28-84

TABLE F.46

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BB11	8:47:25.75	8:47:25.35	433.3	434.7	495.04	496.64	51.8	1
BB13	8:54:59.75	8:54:59.30	413.02	421.28	495.04	504.94	52.4	3
BB15	10:32:58.75	10:32:58.30	463.33	473.59	495.04	506.00	53.1	3
BB17	10:41:03.75	10:41:03.30	400.46	407.57	495.04	503.83	46.5	3
BB19	10:48:18.25	10:48:17.80	453.75	457.2	495.04	498.80	44.6	3
BB21	NA	NA	NA	NA	495.04	NA	NA	NA
BB23	11:03:05.75	11:03:05.30	490.88	497.63	495.04	501.85	54.9	3
BB25	11:10:34.75	11:10:34.30	480.19	488.49	495.04	503.59	59.2	3

TEST DATE: 8-28-84

TABLE F.47

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BB11	8:47:28.75	8:47:28.05	690.8	723.7	698.03	731.27	54.2	1
BB13	8:55:00.75	8:55:00.10	654.2	678.07	698.03	723.50	50.3	3
BB15	10:32:58.75	10:32:58.10	688.8	722.75	698.03	732.43	54.2	3
BB17	10:41:03.75	10:41:03.10	643.1	669.73	698.03	726.93	47.3	3
BB19	10:48:18.25	10:48:17.60	680.6	716.66	698.03	735.01	44.2	3
BB21	NA	NA	NA	NA	698.03	NA	NA	NA
BB23	11:03:05.25	11:03:04.60	708.6	748.59	698.03	737.42	54	3
BB25	11:10:35.25	11:10:34.60	701.7	732.98	698.03	729.15	58.2	3

TEST DATE: 8-28-84

TABLE F.48

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BB11	8:47:25.25	8:47:24.75	616	624.8	698.03	708.00	51.7	1
BB13	8:55:00.25	8:54:59.60	654.2	678.07	698.03	723.50	51.3	3
BB15	10:32:58.25	10:32:57.60	688.8	722.75	698.03	732.43	52.9	3
BB17	10:41:03.25	10:41:02.60	643.1	669.73	698.03	726.93	48.2	3
BB19	10:48:17.75	10:48:17.10	680.6	716.66	698.03	735.01	39.1	3
BB21	NA	NA	NA	NA	698.03	NA	NA	NA
BB23	11:03:04.25	11:03:03.69	666.9	671.7	698.03	703.05	55.2	1
BB25	11:10:34.75	11:10:34.10	701.7	732.98	698.03	729.15	59.9	3

TEST DATE: 8-28-84 TABLE F.49

OPERATION: ICAO TAKEOFF, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BB-11	8:47:31.25	8:47:30.70	538.03	560.49	624.56	650.63	54.9	3
BB-13	8:55:04.75	8:55:04.28	559.8	583	624.56	650.44	52	1
BB-15	10:33:03.75	10:33:03.20	599.25	616.75	624.56	642.80	60.8	3
BB-17	10:41:08.75	10:41:08.30	525.95	563.22	624.56	668.81	58.6	3
BB-19	10:48:23.25	10:48:22.70	582.49	598	624.56	641.20	55.9	3
BB-21	NA	NA	571.56	NA	624.56	NA	NA	NA
BB-23	11:03:09.75	11:03:09.20	623.83	632.15	624.56	632.90	56.1	3
BB-25	11:10:37.25	11:10:36.60	618.31	747.5	624.56	755.06	49.2	3

TEST DATE: 8-28-84 TABLE F.50

OPERATION: ICAO TAKEOFF, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BB-11	8:47:20.75	8:47:20.40	259.25	267.92	365.51	377.73	52.1	3
BB-13	8:54:55.25	8:54:54.90	256.92	287.12	365.51	408.47	51.6	3
BB-15	10:32:52.75	10:32:52.40	317.89	341.37	365.51	392.51	53	3
BB-17	10:40:58.25	10:40:57.90	263.99	278.85	365.51	386.08	51.8	3
BB-19	10:48:13.25	10:48:12.90	308.27	315.87	365.51	374.52	56.1	3
BB-21	NA	NA	NA	NA	365.51	NA	NA	NA
BB-23	11:02:59.75	11:02:59.39	404.4	404.4	365.51	365.51	50.1	1
BB-25	11:10:30.25	11:10:29.92	391.7	391.7	365.51	365.51	50.2	1

TEST DATE: 8-28-84

TABLE F.51

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BZ32	11:49:58.25	11:49:57.82	457	457	495.04	495.04	50.3	1
BZ34	11:57:07.75	11:57:07.36	432.6	432.8	495.04	495.27	49.1	1
BZ36	12:04:58.25	12:04:57.81	456	458	495.04	497.21	50.8	1
BZ38	12:12:19.25	12:12:18.89	423.8	423.8	495.04	495.04	52.1	1
BZ40	12:18:52.25	12:18:51.88	455.1	455.2	495.04	495.15	54	1

TEST DATE: 8-28-84

TABLE F.52

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BZ32	11:49:58.25	11:49:57.62	667.7	668.2	698.03	698.55	50.4	1
BZ34	11:57:08.75	11:57:08.16	640	640.2	698.03	698.25	49.2	1
BZ36	12:04:57.75	12:04:57.11	655	656.4	698.03	699.52	50.8	1
BZ38	12:12:19.25	12:12:18.69	645.2	645.2	698.03	698.03	52	1
BZ40	12:18:52.25	12:18:51.68	668.1	0	698.03	0.00	54.1	1

TEST DATE: 8-28-84

TABLE F.53

OPERATION: ICAO TAKEOFF

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BZ32	11:49:58.75	11:49:58.12	673.3	674.5	698.03	699.27	50.2	1
BZ34	11:57:08.75	11:57:08.16	666.5	672.7	698.03	704.52	49.2	1
BZ36	12:04:58.25	12:04:57.61	684	685.4	698.03	699.46	50.8	1
BZ38	12:12:19.75	12:12:19.19	651.7	652.5	698.03	698.89	52.2	1
BZ40	12:18:52.25	12:18:51.68	670.2	670.6	698.03	698.45	54.1	1

TEST DATE: 8-28-84

TABLE F.54

OPERATION: ICAO TAKEOFF, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BZ-32	11:50:04.25	11:50:03.72	573.3	573.8	624.56	625.10	51.9	1
BZ-34	11:57:13.25	11:57:12.76	558.9	560.4	624.56	626.24	50.5	1
BZ-36	12:05:02.75	12:05:02.21	576.5	581.5	624.56	629.98	50.7	1
BZ-38	12:12:24.25	12:12:23.79	530.1	531.5	624.56	626.21	54.1	1
BZ-40	12:18:57.75	12:18:57.28	591.2	591.5	624.56	624.88	55.3	1

TEST DATE: 8-28-84

TABLE F.55

OPERATION: ICAO TAKEOFF, TARGET IAS-57 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BZ-32	11:49:52.75	11:49:52.42	319.6	319.8	365.51	365.74	52.1	1
BZ-34	11:57:02.25	11:57:01.90	250.24	295.06	365.51	430.98	48	3
BZ-36	12:04:52.25	12:04:51.90	266.61	291.82	365.51	400.07	49.7	3
BZ-38	12:12:13.75	12:12:13.41	321.8	321.8	365.51	365.51	52	1
BZ-40	12:18:47.25	12:18:46.98	332.1	332.6	365.51	366.06	50.9	1

TEST DATE: 8-28-84

TABLE F.56

OPERATION: 6 DEGREE APPROACH, TARGET IAS-57 KNOTS

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CC10	8:43:54.25	8:43:53.88	394.1	445.6	391.53	442.69	55.6	1
CC12	8:52:07.25	8:52:06.82	390.8	443.8	391.53	444.63	58.8	1
CC14	8:58:54.75	8:58:54.35	365.8	449.8	391.53	481.44	58.3	1
CC16	10:36:45.25	10:36:44.80	373.9	443.74	391.53	464.67	62	3
CC18	10:45:03.75	10:45:03.30	314.06	395.95	391.53	493.62	56.8	3
CC20	10:52:18.25	10:52:17.80	381.78	453.91	391.53	465.50	60	3
CC22	10:59:15.75	10:59:15.30	354.83	428.95	391.53	473.31	61.6	3
CC24	11:07:17.25	11:07:16.88	407.8	486	391.53	466.61	58	1

TEST DATE: 8-28-84 TABLE F.57

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CC10	8:43:47.75	8:43:46.70	628.8	1063.66	628.87	1063.78	59.3	3
CC12	8:52:09.75	8:52:09.12	644.6	645.8	628.87	630.04	58.3	1
CC14	8:58:55.75	8:58:55.15	621.7	652	628.87	659.52	58.3	1
CC16	10:36:45.75	10:36:45.10	621.6	657.2	628.87	664.89	62.7	3
CC18	10:45:03.75	10:45:03.10	585.1	646.25	628.87	694.59	57.4	3
CC20	10:52:17.25	10:52:16.60	624.7	722.86	628.87	727.69	60.4	3
CC22	10:59:17.75	10:59:17.26	605.9	605.9	628.87	628.87	60.7	1
CC24	11:07:21.75	11:07:21.10	634.4	649.54	628.87	643.88	55.4	3

TEST DATE: 8-28-84 TABLE F.58

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CC10	8:43:55.75	8:43:55.28	583	589	628.87	635.34	55.4	1
CC12	8:52:08.75	8:52:08.22	609.3	615.7	628.87	635.48	58.6	1
CC14	NA	NA	NA	NA	628.87	NA	NA	NA
CC16	10:36:45.25	10:36:44.60	621.6	683	628.87	690.99	61.9	3
CC18	10:45:04.75	10:45:04.20	585.1	624.77	628.87	671.51	55.1	3
CC20	10:52:20.75	10:52:20.20	624.7	626.41	628.87	630.59	56.3	3
CC22	10:59:19.75	10:59:19.16	610.3	645.5	628.87	665.14	59.7	1
CC24	11:07:19.25	11:07:18.78	599.2	605.3	628.87	635.27	58	2

TEST DATE: 8-28-84 TABLE F.59

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CC-10	8:43:48.25	8:43:47.70	463.35	566.47	442.97	541.55	57.8	3
CC-12	8:52:02.25	8:52:01.82	447.8	502.6	442.97	497.18	58.8	1
CC-14	8:58:52.25	8:58:51.85	442.5	442.9	442.97	443.37	57.9	1
CC-16	10:36:39.25	10:36:38.70	461	599.01	442.97	575.59	59	3
CC-18	10:44:58.25	10:44:57.80	377.63	494.49	442.97	580.05	60.5	3
CC-20	10:52:13.75	10:52:13.30	444.17	562.01	442.97	560.49	58.5	3
CC-22	10:59:09.25	10:59:08.70	399.15	618.61	442.97	686.52	58	3
CC-24	11:07:12.75	11:07:12.20	476.63	576.45	442.97	535.74	58.7	3

TEST DATE: 8-28-84 TABLE F.60

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CC-10	8:43:59.25	8:43:58.98	333.5	399.6	340.1	407.51	56.5	1
CC-12	8:52:11.75	8:52:11.32	340	424.6	340.1	424.72	57.4	1
CC-14	8:59:00.25	8:58:59.95	304	361.1	340.1	403.98	57.2	1
CC-16	10:36:50.25	10:36:49.90	279.35	324.12	340.1	394.61	63.5	3
CC-18	10:45:10.75	10:45:10.50	236.66	240.04	340.1	344.96	53.2	3
CC-20	10:52:23.75	10:52:23.30	307.75	373.02	340.1	412.23	56.9	3
CC-22	10:59:19.75	10:59:19.36	354.5	430.8	340.1	413.30	59.6	1
CC-24	11:07:23.25	11:07:22.80	299.92	376.37	340.1	426.79	53.6	3

TEST DATE: 8-28-84

TABLE F.61

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CZ31	11:40:04.25	11:40:03.80	368.6	445	391.53	472.68	53.2	3
CZ33	11:54:05.25	11:54:04.80	409.29	419.85	391.53	401.64	57.5	3
CZ35	12:01:20.75	12:01:20.30	361.87	490.02	391.53	530.19	54.9	3
CZ37	12:09:17.25	12:09:16.85	423.7	465.6	391.53	430.25	60.3	1
CZ39	12:15:49.75	12:15:49.30	349.95	478.43	391.53	535.28	55.7	3

TEST DATE: 8-28-84

TABLE F.62

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CZ31	11:40:03.75	11:40:03.10	616.6	708.3	628.87	722.39	53.5	3
CZ33	11:54:02.75	11:54:02.00	644	744.5	628.87	727.01	58.4	3
CZ35	12:01:25.75	12:01:25.12	619.1	638.3	628.87	648.37	54.3	1
CZ37	12:09:17.25	12:09:16.65	666	700.6	628.87	661.54	60.3	1
CZ39	12:15:53.75	12:15:53.20	605.7	606.49	628.87	629.69	57.3	3

TABLE F.63

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CZ31	11:40:06.25	11:40:05.60	616.6	646.92	628.87	659.79	59.2	3
CZ33	11:54:05.75	11:54:05.10	644	649.22	628.87	633.97	58.1	3
CZ35	12:01:28.25	12:01:27.60	613.7	695.47	628.87	712.66	55.3	3
CZ37	12:09:18.75	12:09:18.15	630.3	633.1	628.87	631.66	59.6	1
CZ39	12:15:54.25	12:15:53.70	605.7	615.63	628.87	639.18	57.7	3

TABLE F.64

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CZ31	11:39:57.75	11:39:57.20	431.97	616.66	442.97	632.36	59.2	3
CZ33	11:53:58.25	11:53:57.70	495.16	585.31	442.97	523.62	59	3
CZ35	12:01:15.75	12:01:15.30	433.8	505.3	442.97	515.98	55.1	1
CZ37	12:09:10.75	12:09:10.10	478.41	650.97	442.97	602.74	58.6	3
CZ39	12:15:45.25	12:15:44.80	417.5	500.96	442.97	531.52	59.7	3

TEST DATE: 8-28-84 TABLE F.65

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CZ31	11:40:09.25	11:40:08.80	290.56	387.59	340.1	453.67	57.4	3
CZ33	11:54:08.25	11:54:07.80	318.12	424.05	340.1	453.35	59.6	3
CZ35	12:01:26.25	12:01:25.92	368	400.3	340.1	369.95	54.3	1
CZ37	12:09:21.75	12:09:21.35	366.9	442.6	340.1	410.27	58.2	1
CZ39	12:15:54.25	12:15:53.80	275.28	464.2	340.1	573.50	58	3

TEST DATE: 8-28-84 TABLE F.66

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
K-41	12:42:21.25	12:42:20.90	337.31	357.75	391.53	415.25	55.4	3
K-42	12:45:39.75	12:45:39.32	423.6	458.4	391.53	423.70	56.8	1
K-43	12:50:15.25	12:50:14.84	376.5	489.1	391.53	508.63	55.5	1
K-44	NA	NA	NA	NA	391.53	NA	NA	NA
K-45	13:00:59.75	13:00:59.40	364.01	367	391.53	394.75	55.4	3
K-46	13:05:36.25	13:05:35.80	368.2	503.6	391.53	535.51	55.8	1

TEST DATE: 8-28-84

TABLE F.67

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
K-41	12:42:20.75	12:42:20.20	599.1	635.96	628.87	667.56	55.4	3
K-42	12:45:36.75	12:45:36.02	652	812.9	628.87	784.06	56.5	1
K-43	12:50:16.75	12:50:16.24	614.5	637.2	628.87	652.10	55.4	1
K-44	NA	NA	663.1	NA	628.87	NA	NA	NA
K-45	13:01:00.25	13:00:59.70	613.7	624.97	628.87	640.42	55.2	3
K-46	13:05:38.75	13:05:38.10	612.6	642.54	628.87	659.60	51.9	3

TEST DATE: 8-28-84

TABLE F.68

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
K-41	12:42:20.75	12:42:20.10	599.1	640.44	628.87	672.26	55.4	3
K-42	12:45:40.75	12:45:40.12	652	657	628.87	633.69	56.8	1
K-43	12:50:20.25	12:50:19.70	614.5	616.62	628.87	631.04	55.3	3
K-44	NA	NA	663.1	NA	628.87	NA	NA	NA
K-45	13:00:58.75	13:00:58.10	613.7	606.77	628.87	621.77	56.2	3
K-46	13:05:42.75	13:05:41.70	612.6	NA	628.87	NA	NA	3

TABLE F.95

TEST DATE: 8-29-84

OPERATION: ICAO TAKEOFF, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BY1	NA	NA	NA	NA	365.51	NA	NA	NA
BY3	8:24:08.75	8:24:08.40	333.77	360.01	365.51	394.25	56.20	3
BY5	8:30:27.75	8:30:27.40	343.41	344.74	365.51	366.93	50.30	3
BY7	NA	NA	NA	NA	365.51	NA	NA	NA
BY9	11:44:43.25	11:44:42.90	333.46	388.58	365.51	425.93	59.10	3
BY11	11:49:49.25	11:49:48.90	345.73	363.80	365.51	384.61	61.10	3
BY13	11:55:36.75	11:55:36.40	343.08	369.51	365.51	393.67	55.50	3
BY15	12:00:56.75	12:00:56.40	358.69	367.46	365.51	374.45	52.30	3
BY17	12:06:52.25	12:06:51.96	349.40	358.80	365.51	375.34	52.10	1

TABLE F.96

TEST DATE: 8-29-84

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CY2	8:16:45.75	8:16:45.33	347.10	433.90	391.53	489.44	59.70	1
CY4	8:27:30.75	8:27:30.48	372.60	372.70	391.53	391.64	61.40	1
CY6	8:33:41.75	8:33:41.30	NA	NA	391.53	NA	NA	3
CY8	11:40:35.75	11:40:35.35	346.20	439.30	391.53	496.82	57.70	1
CY10	11:47:23.25	11:47:22.91	362.10	407.80	391.53	440.94	54.80	1
CY12	11:52:51.75	11:52:51.37	403.60	472.00	391.53	457.88	57.00	1
CY14	11:58:16.75	11:58:16.30	366.20	455.90	391.53	487.43	55.70	1
CY16	12:04:06.75	12:04:06.38	362.70	487.50	391.53	526.25	58.70	1
CY18	12:10:56.25	12:10:55.90	346.02	410.50	391.53	464.48	54.90	3

TEST DATE: 8-29-84

TABLE F.93

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BY1	NA	NA	NA	NA	698.03	NA	NA	NA
BY3	8:24:12.25	8:24:11.60	672.90	711.28	698.03	737.84	57.20	3
BY5	8:30:32.25	8:30:31.60	699.00	720.34	698.03	719.34	52.10	3
BY7	NA	NA	NA	NA	698.03	NA	NA	NA
BY9	11:44:46.75	11:44:46.10	667.30	758.44	698.03	793.37	57.40	3
BY11	11:49:52.25	11:49:51.60	679.70	762.66	698.03	783.23	55.10	3
BY13	11:55:41.25	11:55:40.60	675.70	717.71	698.03	741.43	61.60	3
BY15	12:01:00.75	12:01:00.10	684.60	730.14	698.03	744.46	56.00	3
BY17	12:06:56.75	12:06:56.10	687.10	1195.42	698.03	1214.44	60.40	3

TEST DATE: 8-29-84

TABLE F.94

OPERATION: ICAO TAKEOFF,, target ias= 57 knots

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BY-1	NA	NA	NA	NA	624.56	NA	NA	NA
BY-3	8:24:19.25	8:24:18.76	566.00	567.93	624.56	626.69	52.90	3
BY-5	8:30:34.75	8:30:34.10	617.09	755.19	624.56	764.33	49.40	3
BY-7	NA	NA	NA	NA	624.56	NA	NA	NA
BY-9	11:44:52.25	11:44:51.70	550.49	638.42	624.56	724.32	47.80	3
BY-11	11:49:58.75	11:49:58.26	569.80	580.00	624.56	635.74	54.80	1
BY-13	11:55:46.25	11:55:45.71	562.93	600.02	624.56	665.71	55.60	3
BY-15	12:01:06.25	12:01:05.72	576.22	584.84	624.56	633.90	53.90	3
BY-17	12:07:01.75	12:07:01.27	584.61	778.12	624.56	831.30	39.50	3

TEST DATE: 8-29-84

TABLE F.91

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BY1	NA	NA	NA	NA	495.04	NA	NA	NA
BY3	8:24:12.25	8:24:11.80	444.78	495.97	495.04	552.02	56.70	3
BY5	8:30:31.25	8:30:30.80	475.31	531.56	495.04	553.62	50.90	3
BY7	NA	NA	NA	NA	495.04	NA	NA	NA
BY9	11:44:47.75	11:44:47.30	439.07	460.45	495.04	519.14	57.70	3
BY11	11:49:53.75	11:49:53.30	456.70	491.37	495.04	532.63	57.20	3
BY13	11:55:41.75	11:55:41.30	450.96	459.55	495.04	504.47	56.80	3
BY15	12:01:02.25	12:01:01.80	462.50	462.80	495.04	495.36	59.50	1
BY17	12:06:57.75	12:06:57.30	465.36	482.89	495.04	513.70	59.70	3

TEST DATE: 8-29-84

TABLE F.92

OPERATION: ICAO TAKEOFF

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
BY1	NA	NA	NA	NA	698.03	NA	NA	NA
BY3	8:24:13.75	8:24:13.10	672.90	711.28	698.03	737.84	55.40	3
BY5	8:30:33.75	8:30:33.10	699.00	720.34	698.03	719.34	50.30	3
BY7	NA	NA	NA	NA	698.03	NA	NA	NA
BY9	11:44:48.75	11:44:48.1	667.30	758.44	698.03	793.37	56.30	3
BY11	11:49:54.25	11:49:53.60	679.70	762.66	698.03	783.23	56.60	3
BY13	11:55:42.25	11:55:41.60	675.70	717.71	698.03	741.43	55.70	3
BY15	12:01:01.75	12:01:01:10	668.30	673.30	698.03	703.25	58.30	1
BY17	12:06:57.75	12:06:57.10	687.10	1195.42	698.03	1214.44	58.80	3

TEST DATE: 8-29-84

TABLE F.89

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AY-19	12:16:30.75	12:16:30.37	379.80	508.10	492.12	658.36	114.10	1
AY-20	12:20:53.25	12:20:52.80	402.20	497.84	492.12	609.14	110.80	3
AY-21	12:23:03.25	12:23:02.81	395.10	495.10	492.12	616.68	115.80	1
AY-22	12:25:06.25	NA	NA	NA	492.12	NA	NA	NA
AY-23	12:36:18.25	12:36:17.70	499.60	636.10	492.12	626.58	115.90	1
AY-24	12:38:18.25	NA	NA	NA	492.12	NA	NA	NA
AY-25	12:40:29.75	12:40:29.27	470.60	610.10	492.12	638.00	113.10	1
AY-26	NA	NA	NA	NA	492.12	NA	NA	NA
AY-27	12:47:48.75	12:47:48.28	520.50	638.30	492.12	603.50	114.80	1
AY-28	12:51:30.75	12:51:30.10	506.90	682.26	492.12	662.37	112.40	3
AY-29	12:54:02.75	12:54:02.27	504.90	579.00	492.12	564.34	114.60	1
AY-30	12:57:38.25	12:57:37.72	513.40	634.40	492.12	608.10	111.60	1

TEST DATE: 8-29-84

TABLE F.90

OPERATION: 492 FT/150 M FLYOVER(0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AY-19	12:16:26.75	12:16:26.47	381.10	396.60	492.12	512.14	112.00	1
AY-20	12:20:58.75	12:20:58.30	394.30	472.70	492.12	589.97	113.00	3
AY-21	12:22:58.25	12:22:57.81	396.20	488.30	492.12	606.52	113.30	1
AY-22	12:25:11.25	NA	NA	NA	492.12	NA	NA	NA
AY-23	12:36:13.25	12:36:12.70	513.80	634.40	492.12	607.63	115.10	1
AY-24	12:38:22.75	NA	NA	NA	492.12	NA	NA	NA
AY-25	12:40:24.75	12:40:24.27	475.30	610.10	492.12	631.69	112.30	1
AY-26	NA	NA	515.90	NA	492.12	NA	NA	NA
AY-27	12:47:45.25	12:47:44.88	506.40	510.80	492.12	496.40	113.90	1
AY-28	12:51:36.25	12:51:35.74	501.70	611.70	492.12	600.02	113.60	1
AY-29	12:53:56.75	12:53:56.27	524.00	680.10	492.12	638.72	112.20	1
AY-30	12:57:44.75	12:57:44.22	514.20	539.30	492.12	516.14	111.50	1

TEST DATE: 8-29-84 TABLE F.87

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AY-19	12:16:29.25	12:16:28.77	615.6	634.7	695.96	717.55	112.7	1
AY-20	12:20:56.75	12:20:56.75	633	654.7	695.96	719.82	114.5	3
AY-21	12:23:00.25	12:22:59.61	645.8	771.6	695.96	831.53	114	1
AY-22	12:25:09.75	NA	NA	NA	695.96	NA	NA	NA
AY-23	12:36:16.25	12:36:15.60	704.7	764.3	695.96	754.82	115.1	1
AY-24	12:38:22.25	NA	NA	NA	695.96	NA	NA	NA
AY-25	12:40:28.75	12:40:28.17	683.1	695.3	695.96	708.39	113	1
AY-26	NA	NA	NA	NA	695.96	NA	NA	NA
AY-27	12:47:46.75	12:47:46.08	719	790.3	695.96	764.98	114.4	1
AY-28	12:51:34.75	12:51:34.10	708.4	740.46	695.96	727.46	113.6	3
AY-29	12:54:00.75	12:54:00.17	716.6	739.4	695.96	718.10	113.8	1
AY-30	12:57:40.25	12:57:39.52	686.6	869	695.96	880.85	111.6	1

TEST DATE: 8-29-84 TABLE F.88

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AY-19	12:16:29.75	12:16:29.27	619.9	624	695.96	700.56	113.1	1
AY-20	12:20:55.75	12:20:55.75	633	734.3	695.96	807.34	111.3	3
AY-21	12:23:01.75	12:23:01.21	613.3	626.6	695.96	711.05	114.9	1
AY-22	12:25:08.75	NA	NA	NA	695.96	NA	NA	NA
AY-23	12:36:16.75	12:36:16.10	710.1	743	695.96	728.20	115.1	1
AY-24	12:38:21.75	NA	NA	NA	695.96	NA	NA	NA
AY-25	12:40:26.75	12:40:26.07	665.1	843.5	695.96	882.64	112.5	1
AY-26	NA	NA	NA	NA	695.96	NA	NA	NA
AY-27	12:47:47.75	12:47:47.18	683	690.8	695.96	703.91	114.7	1
AY-28	12:51:34.25	12:51:33.50	708.4	778.18	695.96	764.51	113.2	3
AY-29	12:54:00.75	12:54:00.17	710.4	737.2	695.96	722.22	113.8	1
AY-30	12:57:41.25	12:57:40.52	737	824	695.96	778.12	111.6	1

TEST DATE: 8-28-84 TABLE F.85

OPERATION: BELL APPROACH

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
MM-58	14:40:46.25	14:40:45.93	286.7	403.9	340.1	479.13	64.5	1
MM-59	14:44:33.75	14:44:33.53	276.6	279.5	340.1	343.67	46.2	2
MM-60	14:48:55.75	NA	NA	NA	340.1	NA	NA	NA
MM-61	14:52:56.25	14:52:55.95	332.3	334.3	340.1	342.15	48.1	1
MM-62	14:56:41.25	14:56:40.95	382.2	387.3	340.1	344.64	52.3	1

TEST DATE: 8-29-84 TABLE F.86

OPERATION: 492 FT/150 M FLYOVER (0.9*VH), TARGET IAS=117 KNOTS

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
AY-19	12:16:29.25	12:16:28.97	375.1	394.5	492.12	517.57	112.9	1
AY-20	12:20:55.75	12:20:55.30	398.3	503.36	492.12	621.93	111.8	3
AY-21	12:23:01.25	12:23:00.81	394.5	441.8	492.12	551.12	114.7	1
AY-22	12:25:08.75	NA	NA	NA	492.12	NA	NA	NA
AY-23	12:36:16.75	12:36:16.20	509.8	544.2	492.12	525.33	115.2	1
AY-24	12:38:21.75	NA	NA	NA	492.12	NA	NA	NA
AY-25	12:40:27.25	12:40:26.77	462.2	604.8	492.12	643.95	112.6	1
AY-26	NA	NA	NA	NA	492.12	NA	NA	NA
AY-27	12:47:46.25	12:47:45.78	501.1	631.2	492.12	619.89	114.3	1
AY-28	12:51:33.75	12:51:33.20	509.7	637.7	492.12	615.71	112.6	3
AY-29	12:54:00.25	12:53:59.77	518.1	582.6	492.12	553.39	113.6	1
AY-30	12:57:40.75	12:57:40.22	516.6	661.6	492.12	630.25	111.6	1

TABLE F.83

TEST DATE: 8-28-84

OPERATION: BELL APPROACH

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
MM-58	14:40:42.75	14:40:42.23	578	612	628.87	665.86	70	1
MM-59	14:44:32.75	14:44:32.13	621.8	705.8	628.87	713.83	47	1
MM-60	14:48:47.25	14:48:46.77	565.3	575.2	628.87	639.88	49.2	1
MM-61	14:52:50.75	14:52:50.75	593.8	596.1	628.87	631.31	55.8	1
MM-62	NA	NA	627.8	NA	628.87	NA	NA	NA

TABLE F.84

TEST DATE: 8-28-84

OPERATION: BELL APPROACH

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
MM-58	14:40:37.75	14:40:37.23	459.2	576.1	442.97	555.74	78.3	1
MM-59	14:44:22.25	14:44:21.83	426.1	431.4	442.97	448.48	57	1
MM-60	14:48:42.25	14:48:41.87	455.4	458.5	442.97	445.99	56.6	1
MM-61	14:52:43.25	14:52:42.75	465.8	579.4	442.97	551.00	70.8	1
MM-62	14:56:32.25	14:56:31.73	539.5	540.9	442.97	444.12	61.7	1

TEST DATE: 8-28-84 TABLE F.81

OPERATION: BELL APPROACH

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
MM-58	14:40:42.25	14:40:41.83	378.2	461	391.53	477.25	70.7	1
MM-59	14:44:27.75	14:44:27.43	361.8	366.1	391.53	396.18	51.7	1
MM-60	14:48:48.25	14:48:47.97	372.8	372.8	391.53	391.53	48.9	1
MM-61	14:52:47.25	14:52:46.75	406.3	560.7	391.53	540.32	63.4	1
MM-62	14:56:35.75	14:56:35.33	461.6	472.4	391.53	400.69	58.3	1

TEST DATE: 8-28-84 TABLE F.82

OPERATION: BELL APPROACH

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
MM-58	14:40:45.25	14:40:44.63	658.1	659.4	628.87	630.11	66.5	1
MM-59	14:44:23.75	14:44:23.13	597.7	758.7	628.87	798.27	56.1	1
MM-60	14:48:48.25	14:48:47.67	663.7	663.9	628.87	629.06	47.9	1
MM-61	14:52:50.75	14:52:50.15	667.8	679.6	628.87	639.98	56	1
MM-62	14:56:37.25	14:56:36.63	716.5	716.8	628.87	629.13	57	1

TEST DATE: 8-28-84

TABLE F.79

OPERATION: BELL APPROACH

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
M-47	13:10:05.25	NA	NA	NA	442.97	NA	NA	NA
M-48	13:14:01.75	13:14:01.23	514.5	536.9	442.97	462.26	84.1	1
M-49	13:18:26.75	13:18:26.38	410.5	510.9	442.97	551.31	62.8	1
M-50	13:23:19.75	13:23:19.13	534.3	672.1	442.97	557.22	64.4	1
M-51	13:28:19.75	13:28:19.34	417.9	417.9	442.97	442.97	61.1	1

TEST DATE: 8-28-84

TABLE F.80

OPERATION: BELL APPROACH

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
M-47	13:10:14.75	NA	NA	NA	340.1	NA	NA	NA
M-48	13:14:07.75	13:14:07.33	396	490.2	340.1	421.00	76.6	1
M-49	13:18:40.75	13:18:40.58	211.8	212.8	340.1	341.71	44.9	1
M-50	13:23:33.75	13:23:33.43	341.3	344.3	340.1	343.09	49.5	1
M-51	13:28:30.25	13:28:30.04	274.9	275.6	340.1	340.97	50.5	1

TEST DATE: 8-28-84

TABLE F.77

OPERATION: BELL APPROACH

PILOT: 1

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
M-47	13:10:08.75	NA	NA	NA	628.87	NA	NA	NA
M-48	13:14:06.75	13:14:06.13	705.1	707.2	628.87	630.74	78.2	1
M-49	13:18:34.25	13:18:33.78	600.3	603.6	628.87	632.33	52.9	1
M-50	13:23:30.25	13:23:29.63	682.1	689.3	628.87	635.51	52.6	1
M-51	13:28:23.25	13:28:22.74	611.9	632.1	628.87	649.63	56.5	1

TEST DATE: 8-28-84

TABLE F.78

OPERATION: BELL APPROACH

PILOT: 1

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
M-47	13:10:10.25	NA	NA	NA	628.87	NA	NA	NA
M-48	13:14:05.75	13:14:05.23	624.2	628.2	628.87	632.90	79.4	1
M-49	13:18:34.75	13:18:34.18	563.7	563.7	628.87	628.87	52.3	1
M-50	13:23:27.25	13:23:26.63	649.6	664.8	628.87	643.58	55.5	1
M-51	13:28:25.25	13:28:24.74	585.5	587	628.87	630.48	54.4	1

TEST DATE: 8-28-84

TABLE F.75

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
KK-52	14:12:43.75	14:12:43.40	264.83	346.9	340.1	445.48	50.8	3
KK-53	14:17:04.75	14:17:04.40	254.58	312.42	340.1	417.36	53.5	3
KK-54	14:23:37.25	14:23:36.95	330.8	390.3	340.1	401.27	55	1
KK-55	14:27:43.25	14:27:42.95	327.1	328.9	340.1	341.97	50.9	1
KK-56	14:32:22.75	14:32:22.30	268.7	362.77	340.1	459.17	52.7	3
KK-57	14:36:52.25	14:36:51.94	317.1	320.7	340.1	343.96	50.6	1

TEST DATE: 8-28-84

TABLE F.76

OPERATION: BELL APPROACH

PILOT: 1

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
M-47	13:10:09.75	NA	NA	NA	391.53	NA	NA	NA
M-48	13:14:03.75	13:14:03.23	450.1	571.4	391.53	497.05	81.8	1
M-49	13:18:34.25	13:18:33.98	313	314.6	391.53	393.53	52.6	1
M-50	13:23:28.25	13:23:27.83	450.4	453.7	391.53	394.40	54.3	1
M-51	13:28:23.75	13:28:23.44	342.8	352.7	391.53	402.84	55.7	1

TEST DATE: 8-28-84 TABLE F.73

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
KK-52	14:12:38.75	14:12:38.20	612.5	652.25	628.87	669.68	56.4	3
KK-53	14:17:00.75	14:17:00.22	596.7	575.7	628.87	606.74	51.7	1
KK-54	14:23:32.75	14:23:32.20	614.9	661.69	628.87	676.72	54.9	3
KK-55	14:27:36.25	14:27:35.75	625.5	599.6	628.87	602.83	54.5	1
KK-56	14:32:15.25	14:32:14.63	611.4	727	628.87	747.77	54.6	1
KK-57	14:36:49.75	14:36:49.14	629.6	630.7	628.87	629.97	51.1	1

TEST DATE: 8-28-84 TABLE F.74

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
KK-52	14:12:35.75	14:12:35.33	438	442.2	442.97	447.22	56	1
KK-53	14:16:55.25	14:16:54.82	399.3	399.3	442.97	442.97	53.5	1
KK-54	14:23:26.25	14:23:25.84	421.9	511.8	442.97	537.36	57	1
KK-55	14:27:30.25	14:27:29.85	443	472.4	442.97	472.37	59.2	1
KK-56	14:32:09.25	14:32:08.72	435.2	627.4	442.97	638.60	57.2	1
KK-57	14:36:38.75	14:36:38.35	437.3	511.2	442.97	517.83	53	1

TEST DATE: 8-28-84

TABLE F.71

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 1

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
KK-52	14:12:41.25	14:12:40.90	358.32	361.37	391.53	394.87	52	3
KK-53	14:17:00.75	14:17:00.42	341.8	342.2	391.53	391.99	51.8	1
KK-54	14:23:31.25	14:23:30.70	366.31	494.74	391.53	528.81	55.7	3
KK-55	14:27:37.75	14:27:37.45	388	388.5	391.53	392.03	53.6	1
KK-56	14:32:18.75	14:32:18.43	363.1	367.9	391.53	396.71	52.7	1
KK-57	14:36:44.25	14:36:43.81	362.9	456.6	391.53	492.62	52	2

TEST DATE: 8-28-84

TABLE F.72

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
KK-52	14:12:37.75	14:12:37.13	651.2	674.5	628.87	651.37	55.7	1
KK-53	14:17:00.25	14:16:59.72	620.8	625.8	628.87	633.93	51.6	1
KK-54	14:23:31.25	14:23:31.25	614.9	716.59	628.87	732.87	55.7	3
KK-55	14:27:38.25	14:27:37.65	664	664.8	628.87	629.63	53.5	1
KK-56	14:32:17.75	14:32:17.23	610.8	635.5	628.87	654.30	53.1	1
KK-57	14:36:46.25	14:36:45.74	623.9	633.2	628.87	638.24	51	1

TEST DATE: 8-28-84 TABLE F.69

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
K-41	12:42:13.75	12:42:13.20	416.45	568.64	442.97	604.84	56.9	3
K-42	12:45:33.75	12:45:33.20	505.22	598.82	442.97	525.04	56.1	3
K-43	12:50:13.75	12:50:13.34	421.9	424.4	442.97	445.59	56.1	1
K-44	NA	NA	NA	NA	442.97	NA	NA	NA
K-45	13:00:50.75	13:00:50.37	451.6	506.6	442.97	496.92	57.1	1
K-46	13:05:35.25	13:05:34.80	419.6	423	442.97	446.56	55.6	1

TEST DATE: 8-28-84 TABLE F.70

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 1

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
K-41	12:42:24.75	12:42:24.30	258.26	424.85	340.1	559.48	57.8	3
K-42	12:45:44.75	12:45:44.30	338.19	394.74	340.1	396.96	55.4	3
K-43	12:50:21.25	12:50:21.20	292.03	393.07	340.1	457.77	54.8	3
K-44	NA	NA	NA	NA	340.1	NA	NA	NA
K-45	13:01:01.75	13:01:01.30	301.9	377.59	340.1	425.37	55.1	3
K-46	13:05:42.25	13:05:41.80	289.36	408.61	340.1	480.26	55.4	3

TEST DATE: 8-29-84

TABLE F.97

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 2

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CY2	8:16:48.75	8:16:48.16	623.70	624.50	628.87	629.68	59.80	1
CY4	8:27:32.25	8:27:31.68	628.20	643.50	628.87	644.19	61.20	1
CY6	8:33:45.75	8:33:45.21	599.00	604.10	628.87	634.22	60.20	1
CY8	11:40:37.25	11:40:36.75	613.60	625.30	628.87	640.86	57.20	1
CY10	11:47:28.75	11:47:28.11	626.20	698.20	628.87	701.18	54.70	1
CY12	11:52:52.25	11:52:51.67	643.60	680.10	628.87	664.53	56.90	1
CY14	11:58:17.25	11:58:16.60	625.50	671.50	628.87	675.12	55.60	1
CY16	12:04:10.75	12:04:10.18	633.70	635.60	628.87	630.76	59.20	1
CY18	12:10:58.25	12:10:57.70	602.10	631.53	628.87	659.61	49.80	3

TEST DATE: 8-29-84

TABLE F.98

OPERATION: 6 DEGREE APPROACH, TARGET IAS=57 KNOTS

PILOT: 2

MICROPHONE: 3

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CY2	8:16:47.25	8:16:46.75	578.00	591.10	628.87	643.12	59.90	2
CY4	8:27:27.75	8:27:27.18	603.40	701.00	628.87	730.59	61.90	1
CY6	8:33:45.75	8:33:45.11	610.80	619.60	628.87	637.93	60.20	1
CY8	11:40:39.75	11:40:39.25	587.50	595.50	628.87	637.43	56.50	1
CY10	11:47:26.75	11:47:26.21	593.20	603.70	628.87	640.00	54.80	1
CY12	11:52:53.25	11:52:52.67	627.40	638.10	628.87	639.60	56.70	1
CY14	11:58:24.75	11:58:24.10	613.20	775.89	628.87	795.72	51.50	3
CY16	12:04:08.75	12:04:08.28	586.10	599.40	628.87	643.14	59.20	1
CY18	12:10:59.75	12:10:59.20	602.10	613.46	628.87	640.74	57.70	3

TEST DATE: 8-29-84

TABLE F.99

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 4

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CY-2	8:16:40.75	8:16:40.33	407.60	588.60	442.97	639.68	59.50	1
CY-4	8:27:24.75	8:27:24.38	399.00	417.90	442.97	463.95	62.10	1
CY-6	8:33:37.75	8:33:37.34	405.10	457.20	442.97	499.94	59.50	1
CY-8	11:40:30.75	11:40:30.30	386.19	468.92	442.97	537.86	57.10	3
CY-10	11:47:16.75	11:47:16.31	428.80	521.50	442.97	538.73	55.80	1
CY-12	11:52:46.25	11:52:45.87	446.50	530.20	442.97	526.01	58.10	1
CY-14	11:58:11.75	11:58:11.30	405.20	480.20	442.97	524.96	56.00	1
CY-16	NA	NA	407.00	NA	442.97	NA	NA	NA
CY-18	12:10:51.25	12:10:50.80	382.62	447.56	442.97	518.16	59.20	3

TEST DATE: 8-29-84

TABLE F.100

OPERATION: 6 DEGREE APPROACH, TARGET IAS= 57 KNOTS

PILOT: 2

MICROPHONE: 5

RUN #	TIME AT PNLTM	TIME RADIATED	CPA TEST	SR TEST	CPA REF	SR REF	SPEED (KTS)	FLAG
CY-2	8:16:50.75	8:16:50.46	300.00	371.50	340.10	421.16	60.00	1
CY-4	8:27:33.25	8:27:32.88	338.00	419.20	340.10	421.80	60.70	1
CY-6	8:33:46.25	8:33:45.81	328.80	455.50	340.10	471.15	60.10	1
CY-8	11:40:40.75	11:40:40.35	321.10	427.90	340.10	453.22	56.20	1
CY-10	11:47:28.25	11:47:27.91	312.80	371.80	340.10	404.25	54.70	1
CY-12	11:52:57.25	11:52:56.87	352.20	419.10	340.10	404.70	56.20	1
CY-14	11:58:25.25	11:58:24.90	320.92	321.22	340.10	340.41	51.30	3
CY-16	12:04:11.75	12:04:11.38	354.10	460.00	340.10	441.81	58.80	1
CY-18	12:11:00.75	12:11:00.30	309.43	422.30	340.10	464.16	60.30	3

APPENDIX G

Meteorological Data Summary

This appendix contains a summary of data acquired from the 10-meter meteorological tower and the SODAR system on August 27, 28, and 29, 1984. Within the tables of this appendix the following data are provided:

Time expressed as Eastern Daylight Time.

Temperature expressed in degrees Fahrenheit and Centigrade.

Relative humidity expressed as a percentage.

Altitude expressed in meters.

Horizontal wind direction, the direction from which the wind is blowing, expressed in degrees.

Horizontal wind speed, expressed in knots.

Cross wind component, the direction, expressed as right or left (relative to the helicopter), and speed, expressed in knots.

On track component, the direction, expressed as head or tail, and speed, expressed in knots.

Vertical wind speed, the speed of upward or downward winds, expressed as + for upward and - for downward, in knots.

A detailed description of meteorological data reduction is contained in Section 6.0 of this report. The reader may also find it helpful to review Figure 18, the SODAR system, and Figures 19 and 20, the 10-meter tower.

TABLE G.1

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 27, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
7:00 a.m	56	13	45	10	285	1.3	RIGHT	0.34	TAIL	1.26	NA
7:15	57	14	48	10	275	0.0	RIGHT	0.00	TAIL	0.00	NA
7:30	58	14	48	10	330	0.4	LEFT	0.20	TAIL	0.35	NA
7:45	58	14	57	10	300	1.5	LEFT	0.00	TAIL	1.50	NA
8:00	59	15	52	10	280	1.5	RIGHT	0.51	TAIL	1.41	NA
8:15	61	16	50	10	290	1.3	RIGHT	0.23	TAIL	1.28	NA
8:30	64	18	56	10	360	0.9	LEFT	0.78	TAIL	0.45	NA
8:45	65	18	65	10	60	0.9	LEFT	0.78	HEAD	0.45	NA
9:00	68	20	62	10	290	1.7	RIGHT	0.30	TAIL	1.67	NA
9:15	68	20	49	10	230	2.6	RIGHT	2.44	TAIL	0.89	NA
9:30	68	20	49	10	200	3.0	RIGHT	2.95	HEAD	0.52	NA
9:45	71	22	39	10	170	2.6	RIGHT	1.99	HEAD	1.67	NA
10:00	71	22	45	10	190	3.5	RIGHT	3.29	HEAD	1.20	NA
10:15	72	22	42	10	180	2.6	RIGHT	2.25	HEAD	1.30	NA
10:30	73	23	39	10	180	3.0	RIGHT	2.60	HEAD	1.50	NA
10:45	75	24	41	10	330	0.9	LEFT	0.45	TAIL	0.78	NA
11:00	77	25	37	10	220	1.3	RIGHT	1.28	TAIL	0.23	NA
11:15	76	24	40	10	250	3.9	RIGHT	2.99	TAIL	2.51	NA
11:30	77	25	37	10	165	4.3	RIGHT	3.04	HEAD	3.04	NA
11:45	78	26	38	10	160	4.3	RIGHT	2.76	HEAD	3.29	NA
12:00	79	26	34	10	160	2.6	RIGHT	1.67	HEAD	1.99	NA
12:15	78	26	40	10	220	3.9	RIGHT	3.84	TAIL	0.68	NA
12:30	79	26	34	10	250	3.9	RIGHT	2.99	TAIL	2.51	NA
12:45	80	27	35	10	230	4.3	RIGHT	4.04	TAIL	1.47	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME THE FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.1 (Continued)

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 27, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
1:00 p.m	81	27	37	10	210	1.7	RIGHT	1.70	TAIL	.00	NA
1:15	80	27	35	10	240	3.0	RIGHT	2.60	TAIL	1.50	NA
1:30	81	27	33	10	160	4.3	RIGHT	2.76	HEAD	3.29	NA
1:45	81	27	30	10	190	4.3	RIGHT	4.04	HEAD	1.47	NA
2:00	82	28	35	10	230	2.6	RIGHT	2.44	TAIL	0.89	NA
2:15	82	28	31	10	180	4.3	RIGHT	3.72	HEAD	2.15	NA
2:30	82	28	29	10	140	7.8	RIGHT	2.67	HEAD	7.33	NA
2:45	84	29	45	10	125	3.0	RIGHT	0.26	HEAD	2.99	NA
3:00	84	29	38	10	110	3.5	LEFT	0.61	HEAD	3.45	NA
3:15	84	29	38	10	180	3.5	RIGHT	3.03	HEAD	1.75	NA
3:30	83	28	40	10	130	4.3	RIGHT	0.75	HEAD	4.23	NA
3:45	82	28	40	10	150	3.0	RIGHT	1.50	HEAD	2.60	NA
4:00	84	29	33	10	150	4.3	RIGHT	2.15	HEAD	3.72	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME THE FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.2

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 28, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
7:00 a.m	66	19	61	10	145	3.9	RIGHT	0.44	HEAD	1.65	NA
7:15	66	19	61	10	140	2.6	RIGHT	0.35	HEAD	0.89	NA
7:30	66	19	70	10	130	2.2	RIGHT	0.17	HEAD	0.38	NA
7:45	68	20	64	10	170	3.5	RIGHT	0.87	HEAD	2.68	NA
8:00	68	20	68	10	165	2.6	RIGHT	0.79	HEAD	1.84	NA
8:15	68	20	68	10	190	3.5	RIGHT	1.22	HEAD	3.29	NA
				40	222	4.1	RIGHT	1.36	TAIL	4.01	0.6
				100	192	5.8	RIGHT	1.26	HEAD	5.52	-0.1
8:30	69	21	64	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
				40	187	4.9	RIGHT	1.17	HEAD	4.51	-0.3
				100	195	7.4	RIGHT	1.31	HEAD	7.15	-0.2
8:45	70	21	60	10	175	3.9	RIGHT	0.96	HEAD	3.19	NA
				40	183	4.9	RIGHT	1.10	HEAD	4.37	0.1
				100	193	7.5	RIGHT	1.27	HEAD	7.17	-0.2
9:00	70	21	64	10	180	5.2	RIGHT	1.05	HEAD	4.50	NA
9:15	70	21	64	10	190	5.2	RIGHT	1.22	HEAD	4.89	NA
9:30	72	22	61	10	190	4.8	RIGHT	1.22	HEAD	4.51	NA
9:45	72	22	66	10	225	3.9	RIGHT	1.31	TAIL	3.77	NA
10:00	74	23	59	10	200	4.3	RIGHT	1.40	HEAD	4.23	NA
10:15	74	23	59	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
10:30	75	24	55	10	190	2.6	RIGHT	1.22	HEAD	2.44	NA
10:45	76	24	59	10	180	2.6	RIGHT	1.05	HEAD	2.25	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME A FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.2 (Continued)

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 28, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
11:00	77	25	56	10	230	4.3	RIGHT	1.22	TAIL	4.04	NA
				40	225	4.3	RIGHT	1.31	TAIL	4.15	0.2
				100	264	9.5	RIGHT	0.63	TAIL	5.58	0.1
				160	264	13.2	RIGHT	0.63	TAIL	7.76	0.1
				200	255	10.3	RIGHT	0.79	TAIL	7.28	-0.0
11:15	77	25	60	10	190	4.3	RIGHT	1.22	HEAD	4.04	NA
11:30	78	26	56	10	200	4.3	RIGHT	1.40	HEAD	4.23	NA
				40	166	1.6	RIGHT	0.80	HEAD	1.15	-0.3
				100	216	5.0	RIGHT	1.47	TAIL	4.97	0.3
				160	225	6.5	RIGHT	1.31	TAIL	6.28	0.3
11:45	79	26	58	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
				40	123	6.3	RIGHT	0.05	HEAD	0.33	-0.6
				100	121	7.2	RIGHT	0.02	HEAD	0.13	-1.4
				160	106	7.2	LEFT	0.24	HEAD	1.74	-1.2
12:00	80	27	55	10	170	5.2	RIGHT	0.87	HEAD	3.98	NA
				40	188	2.6	RIGHT	1.19	HEAD	2.41	0.3
				100	174	6.5	RIGHT	0.94	HEAD	5.26	-0.4
				160	197	8.6	RIGHT	1.34	HEAD	8.38	-0.4
				200	221	7.6	RIGHT	1.38	TAIL	7.46	-1.0
12:15	80	27	55	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
				40	132	6.6	RIGHT	0.21	HEAD	1.37	0.1
				100	130	6.9	RIGHT	0.17	HEAD	1.20	-1.2
12:30	80	27	55	10	165	4.3	RIGHT	0.79	HEAD	3.04	NA
12:45	82	28	49	10	190	7.4	RIGHT	1.22	HEAD	6.95	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME A FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.2 (Continued)

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 28, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
1:00 p.m	81	27	52	10	170	6.1	RIGHT	0.87	HEAD	4.67	NA
				40	149	8.3	RIGHT	0.51	HEAD	4.02	-0.1
				100	145	8.9	RIGHT	0.44	HEAD	3.76	0.0
				160	157	9.7	RIGNT	0.65	HEAD	5.84	0.6
1:15	81	27	52	10	175	3.9	RIGHT	0.96	HEAD	3.19	NA
				40	149	7.8	RIGHT	0.51	HEAD	3.78	-0.7
				100	148	8.5	RIGHT	0.49	HEAD	3.99	-1.0
1:30	83	28	47	10	200	4.3	RIGHT	1.40	HEAD	4.23	NA
1:45	83	28	47	10	140	6.1	RIGHT	0.35	HEAD	2.09	NA
2:00	84	29	48	10	170	6.1	RIGHT	0.87	HEAD	4.67	NA
2:15	84	29	48	10	150	5.2	RIGHT	0.52	HEAD	2.60	NA
				40	206	4.7	RIGHT	1.50	HEAD	4.69	-0.1
				100	206	7.1	RIGHT	1.50	HEAD	7.08	-0.4
				160	186	7.5	RIGHT	1.15	HEAD	6.85	0.1
2:30	84	29	48	10	200	4.3	RIGHT	1.40	HEAD	4.23	NA
				40	202	5.8	RIGHT	1.43	HEAD	5.74	0.6
				100	194	9.5	RIGHT	1.29	HEAD	9.13	0.6
				160	208	8.3	RIGHT	1.54	HEAD	8.29	0.4
2:45	84	29	48	10	140	9.6	RIGHT	0.35	HEAD	3.28	NA
				40	208	6.5	RIGHT	1.54	HEAD	6.50	1.0
				100	227	12.5	RIGHT	1.27	TAIL	11.95	1.2
				160	226	15.0	RIGHT	1.29	TAIL	14.42	1.7
3:00	85	29	48	10	155	6.1	RIGHT	0.61	HEAD	3.50	NA
3:15	86	30	38	10	140	3.5	RIGHT	0.35	HEAD	1.20	NA
3:30	86	30	45	10	135	4.3	RIGHT	0.26	HEAD	1.11	NA
3:45	86	30	45	10	120	4.3	LFFT	0.00	HEAD	0.00	NA
4:00	84	29	50	10	110	4.3	LEFT	0.17	HEAD	0.75	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME A FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.3

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 29, 1984

TIME (EDT)	TEMPERATURE (DEGREES)		RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT)		ON TRACK COMPONET (HEAD/TAIL)		VERTICAL WIND SPEED (KNOTS)
	F	C					DIRECTION	(KNOTS)	DIRECTION	(KNOTS)	
7:00 a.m	70	21	63	10	200	3.5	RIGHT	1.40	HEAD	3.45	NA
7:15	70	21	63	10	180	3.0	RIGHT	1.05	HEAD	2.60	NA
7:30	70	21	63	10	180	3.0	RIGHT	1.05	HEAD	2.60	NA
7:45	71	22	61	10	190	3.0	RIGHT	1.22	HEAD	2.82	NA
8:00	71	22	61	10	200	3.5	RIGHT	1.40	HEAD	3.45	NA
8:15	71	22	61	10	215	3.9	RIGHT	1.48	TAIL	3.89	NA
				40	165	4.4	RIGHT	0.79	HEAD	3.11	-0.3
				160	212	6.1	RIGHT	1.54	TAIL	6.10	-0.3
				200	220	7.4	RIGHT	1.40	TAIL	7.29	-0.4
8:30	72	22	58	10	210	3.5	RIGHT	1.57	TAIL	3.50	NA
8:45	72	22	58	10	230	2.6	RIGHT	1.22	TAIL	2.44	NA
9:00	72	22	58	10	210	4.3	RIGHT	1.57	TAIL	4.30	NA
9:15	72	22	58	10	230	3.5	RIGHT	1.22	TAIL	3.29	NA
9:30	73	23	61	10	220	3.5	RIGHT	1.40	TAIL	3.45	NA
9:45	73	23	61	10	215	3.5	RIGHT	1.48	TAIL	3.49	NA
10:00	74	23	59	10	220	3.5	RIGHT	1.40	TAIL	3.45	NA
10:15	74	23	62	10	250	5.2	RIGHT	0.87	TAIL	3.98	NA
10:30	74	23	55	10	210	3.9	RIGHT	1.57	TAIL	3.90	NA
10:45	76	24	52	10	180	3.5	RIGHT	1.05	HEAD	3.03	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME THE FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

TABLE G.3 (Continued)

METEOROLOGICAL DATA SUMMARY TABLE
TEST DATE: AUGUST 29, 1984

TIME (EDT)	TEMPERATURE (DEGREES) F	C	RELATIVE HUMIDITY (%)	ALTITUDE (METERS)	HORIZONTAL WIND DIRECTION (DEGREES)	HORIZONTAL WIND SPEED (KNOTS)	CROSS WIND COMPONENT (RIGHT/LEFT) DIRECTION	(KNOTS)	ON TRACK COMPONET (HEAD/TAIL) DIRECTION	(KNOTS)	VERTICAL WIND SPEED (KNOTS)
11:00	75	24	59	10	190	5.6	RIGHT	1.22	HEAD	5.26	NA
11:15	76	24	58	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
11:30	76	24	58	10	180	3.5	RIGHT	1.05	HEAD	3.03	NA
				40	185	3.0	RIGHT	1.13	HEAD	2.72	0.0
				100	162	4.8	RIGHT	0.73	HEAD	3.21	-0.2
				160	181	5.2	RIGHT	1.06	HEAD	4.55	-0.1
				200	181	4.6	RIGHT	1.06	HEAD	4.02	-0.2
11:45	76	24	58	10	180	4.3	RIGHT	1.05	HEAD	3.72	NA
12:00	77	25	58	10	200	6.1	RIGHT	1.40	HEAD	6.01	NA
12:15	77	25	58	10	205	4.3	RIGHT	1.48	HEAD	4.28	NA
12:30	80	27	48	10	170	5.2	RIGHT	0.87	HEAD	3.98	NA
12:45	78	26	60	10	190	5.6	RIGHT	1.22	HEAD	5.26	NA
				100	167	10.7	RIGHT	0.82	HEAD	7.82	-1.3
				160	155	11.3	RIGHT	0.61	HEAD	6.48	-0.4
1:00 p.m	76	24	62	10	185	6.9	RIGHT	1.13	HEAD	6.25	NA

NOTES:

1. CROSS WIND AND ON TRACK COMPONENTS ASSUME THE FLIGHT DIRECTION OF 120 DEGREES.
2. FOR VERTICAL WIND SPEED: "+" IS AN UPWARD WIND MOVEMENT
   "-" IS A DOWNWARD WIND MOVEMENT
3. 10 METER DATA FROM CLIMATRONICS 10 METER TOWER, OTHER DATA FROM SODAR SYSTEM.

APPENDIX H

15 Minute SODAR Meteorological Data

In this appendix, the data represents the output from the SODAR system. Each table represents a meteorological sample for 15 minutes at altitudes from ground level (0 meters) to 300 meters. A description of the data and a sample SODAR report with marked fields is given below. This may be used as an aid for reading the actual data.

Date:	Given in month, day and year.
Time:	Given in hour, minute and second at which the fifteen-minute sample ended.
Valid Returns:	The number of valid echo returns from each of the three antennas.
Validity:	A flag for determining whether a sample is valid or not. (I=invalid, V=valid)
Altitude of Sample:	The height in meters above ground level at which the sample was taken.
Echo Strength:	Not important to the reader.
Std dev of Echo Strength:	Not important to the reader.
Horizontal Wind Speed:	The wind speed at a given altitude in cm/sec.
Horizontal Wind Direction Azimuth:	The wind direction from 0 to 360^{o} at a given altitude.
Std dev in Wind Direction:	Standard deviation in wind direction, one measure of stability during the 15 minute sample.
Vertical Wind Speed:	The speed, expressed in cm/sec, at which the wind moves upward or downwards, an indicator of turbulence.

Std dev
U Radial Component: Not important to the reader.

Std dev
V Radial Component: Not important to the reader.

Std dev
W Radial Component: Not important to the reader.

NOTES: "+" in the vertical wind column indicates ascending wind.
"-" in the vertical wind column indicates descending wind.
The time given at the top of the page is the sample ending time.

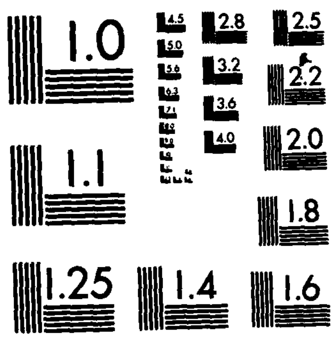
The conversion for changing cm/sec to kts. is as follows:
kts. = cm/sec x 0.01943

		DATE			TIME			NUMBER OF VALID RETURNS				
$DM		8	27	84	17	45	0	503	597	557		

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
INVALID→ I	300	19	-9999						0	0	0
V	280	17	-9999	298	163	-9999	-4	-9999	135	66	59
VALID→ V	260	17	15	314	163	27	-14	66	41	51	67
V	240	20	13	390	161	20	-21	54	41	50	66
V	220	17	12	377	154	16	-21	50	40	62	54
V	200	18	13	412	142	16	-24	57	48	42	50
V	180	18	16	393	147	28	-36	47	41	45	57
V	160	16	22	428	133	21	-31	49	48	52	47
V	140	16	29	400	141	22	-27	52	37	49	49
V	120	19	12	421	143	17	-33	49	41	42	52
V	100	20	17	416	138	20	-33	47	46	41	49
V	80	22	23	412	139	18	-35	43	43	49	47
V	60	29	17	409	138	10	-35	50	37	46	43
V	40	45	44	370	127	19	-15	43	28	39	50
V	0	0	0	125	77	77	62	0	40	45	43
VALIDITY	ALTITUDE OF SAMPLE (METERS)	ECHO STRENGTH	Std dev ECHO STRENGTH	HORIZONTAL WIND SPEED (cm/sec)	HORIZONTAL WIND DIRECTION AZIMITH (DEGREES)	Std dev WIND DIRECTION	VERTICAL WIND SPEED (cm/sec)	Std dev VERTICAL WIND SPEED	Std dev U RADIAL COMPONENT	Std dev V RADIAL COMPONENT	Std dev W RADIAL COMPONENT

AD-A159 898 INTERNATIONAL CIVIL AVIATION ORGANIZATION HELICOPTER NOISE MEASUREMENT RE (U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR. 4/5

UNCLASSIFIED J S NEWMAN ET AL SEP 85 FAA/EE-85-6 F/G 14/2 NL



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE H.1

#DM 8 27 84 17 14 53 364 442 453

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	18	-9999						0	0	0
V	280	17	25	378	156	-9999	-33	41	62	94	15
V	260	17	11	223	180	16	-49	49	46	59	41
V	240	19	39	-9999	-9999	-9999	-44	40	42	51	49
V	220	16	18	214	156	32	-44	39	42	98	40
V	200	24	108	342	148	21	-49	47	39	42	39
V	180	17	34	310	158	22	-47	43	45	49	47
V	160	19	38	293	171	30	-34	42	45	50	43
V	140	20	55	248	162	29	-40	50	39	45	42
V	120	20	35	334	159	28	-34	45	43	50	50
V	100	25	80	297	157	27	-32	45	47	40	45
V	80	35	35	273	178	27	-19	54	43	46	45
V	60	45	3	271	162	30	-30	55	45	40	54
V	40	69	30	236	173	-9999	-18	51	44	37	55
V	0	0	0	91	89	79	62	0	39	32	51
$											

TABLE H.2

#DM 8 27 84 17 30 0 406 466 441

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	18	-9999						999	999	999
I	240	16	22						157	39	45
I	220	15	16						999	999	50
V	200	14	18	329	148	16	-33	33	112	63	45
V	180	14	2	329	143	27	-34	43	42	32	33
V	160	15	23	394	142	15	-28	46	43	42	43
V	140	16	57	355	155	18	-36	42	32	36	46
V	120	17	31	372	146	15	-28	33	33	52	42
V	100	20	24	366	143	14	-29	32	39	31	33
V	80	33	133	404	141	13	-38	38	31	34	32
V	60	34	25	387	139	21	-34	53	34	38	38
V	40	58	33	328	136	16	-4	58	42	44	53
V	0	0	0	116	76	78	62	0	49	36	58
$											

#DM	DATE			TIME			NUMBER OF VALID RETURNS		
	8	27	84	17	45	0	503	597	557

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
INVALID→ I	300	19	-9999						0	0	0
V	280	17	-9999	298	163	-9999	-4	-9999	135	66	59
VALID→ V	260	17	15	314	163	27	-14	66	41	51	67
V	240	20	13	390	161	20	-21	54	41	50	66
V	220	17	12	377	154	16	-21	50	40	62	54
V	200	18	13	412	142	16	-24	57	48	42	50
V	180	18	16	393	147	28	-36	47	41	45	57
V	160	16	22	428	133	21	-31	49	48	52	47
V	140	16	29	400	141	22	-27	52	37	49	49
V	120	19	12	421	143	17	-33	49	41	42	52
V	100	20	17	416	138	20	-33	47	46	41	49
V	80	22	23	412	139	18	-35	43	43	49	47
V	60	29	17	409	138	10	-35	50	37	46	43
V	40	45	44	370	127	19	-15	43	28	39	50
V	0	0	0	125	77	77	62	0	40	45	43

VALIDITY

ALTITUDE OF SAMPLE (METERS)

ECHO STRENGTH

Std dev ECHO STRENGTH

HORIZONTAL WIND SPEED (cm/sec)

HORIZONTAL WIND DIRECTION AZIMITH (DEGREES)

Std dev WIND DIRECTION

VERTICAL WIND SPEED (cm/sec)

Std dev VERTICAL WIND SPEED

Std dev U RADIAL COMPONENT

Std dev V RADIAL COMPONENT

Std dev W RADIAL COMPONENT

TABLE H.3

#DM 8 27 84 17 45 0 503 597 557

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	19	-9999						0	0	0
V	280	17	-9999	298	163	-9999	-4	-9999	135	66	59
V	260	17	15	314	163	27	-14	66	41	51	67
V	240	20	13	390	161	20	-21	54	41	50	66
V	220	17	12	377	154	16	-21	50	40	62	54
V	200	18	13	412	142	16	-24	57	48	42	50
V	180	18	16	393	147	28	-36	47	41	45	57
V	160	16	22	428	133	21	-31	49	48	52	47
V	140	16	29	400	141	22	-27	52	37	49	49
V	120	19	12	421	143	17	-33	49	41	42	52
V	100	20	17	416	138	20	-33	47	48	41	49
V	80	22	23	412	139	18	-35	43	43	49	47
V	60	29	17	409	138	10	-35	50	37	46	43
V	40	45	44	370	127	19	-15	43	28	39	50
V	0	0	0	125	77	77	62	0	40	45	43
$											

TABLE H.4

#DM 8 27 84 18 0 0 398 566 410

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	18	-9999						0	0	0
I	280	25	-9999						999	999	41
V	260	16	-9999	337	170	-9999	-33	-9999	999	999	58
V	240	14	-9999	308	171	-9999	-38	-9999	35	30	22
V	220	14	4	344	163	9	-22	37	29	30	27
V	200	13	14	326	159	7	-32	25	42	23	37
V	180	14	22	376	154	17	-38	36	30	29	25
V	160	13	12	380	151	13	-29	37	35	35	36
V	140	14	15	375	152	12	-30	30	31	36	37
V	120	15	25	384	146	13	-27	32	27	30	30
V	100	14	25	370	149	12	-25	35	28	30	32
V	80	17	24	380	145	16	-16	34	39	33	35
V	60	22	46	410	142	12	-23	29	37	38	34
V	40	35	25	371	142	7	1	40	31	38	29
V	0	0	0	96	74	77	63	0	36	48	40
$											

TABLE H.5

#DM 8 27 84 18 14 59 234 304 231

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	14	-9999						999	999	999
V	200	12	-9999	458	165	-9999	-15	-9999	999	999	31
V	180	12	32	392	168	-9999	-16	27	32	29	23
V	160	10	22	383	166	-9999	-27	40	36	24	27
V	140	10	4	467	157	8	-28	32	35	31	40
V	120	12	27	493	157	5	-24	31	38	28	32
V	100	17	23	513	153	5	-34	30	28	26	31
V	80	20	46	486	152	8	-33	37	26	35	30
V	60	29	16	491	148	11	-25	28	27	31	37
V	40	39	30	420	145	13	-25	32	36	38	28
V	0	0	0	76	74	76	63	0	37	32	32
$											

TABLE H.6

#DM 8 27 84 18 30 1 283 375 230

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	10	17						140	85	999
I	160	10	19						999	999	39
V	140	11	27	404	176	17	-16	36	109	32	34
V	120	13	20	455	168	10	-18	40	46	29	36
V	100	18	36	395	169	8	-19	35	34	33	40
V	80	26	41	382	167	17	-16	37	31	31	35
V	60	30	23	345	159	16	-17	29	35	36	37
V	40	45	5	287	162	15	-19	35	42	33	29
V	0	0	0	47	85	76	62	0	33	33	35
$											

TABLE H.7

#DM 8 27 84 18 44 59 327 396 305

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
V	260	-9999	-9999	470	169	-9999	-9999	-9999	999	999	999
V	240	16	-9999	508	164	-9999	-36	-9999	10	33	999
V	220	14	-9999	-9999	-9999	-9999	-44	-9999	27	26	20
V	200	11	-9999	-9999	-9999	-9999	-8	-9999	999	999	23
V	180	10	-9999	-9999	-9999	-9999	-28	-9999	117	20	49
V	160	11	18	440	162	-9999	-22	38	107	31	30
V	140	13	29	481	160	6	-27	33	33	33	38
V	120	12	38	504	161	3	-30	31	36	28	33
V	100	19	17	468	161	8	-34	24	30	32	31
V	80	32	31	452	157	6	-22	29	32	29	24
V	60	49	8	381	159	14	-32	30	32	27	29
V	40	69	19	313	158	9	-28	33	36	37	30
V	0	0	0	45	80	75	62	0	30	27	33
$											

TABLE H.8

#DM 8 27 84 18 59 59 484 612 562

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	17	-9999						0	0	0
I	280	17	-9999						999	999	19
V	260	21	20	487	162	-9999	-7	35	999	999	31
V	240	17	31	602	160	-9999	-12	46	36	68	35
V	220	16	9	582	160	2	-30	30	35	38	46
V	200	16	24	546	159	10	-24	36	25	29	30
V	180	15	20	519	162	8	-26	29	34	34	36
V	160	15	13	513	160	8	-29	32	34	28	29
V	140	16	25	523	160	4	-34	30	35	32	32
V	120	18	24	513	159	6	-27	26	30	31	30
V	100	24	27	541	157	6	-35	24	33	28	26
V	80	37	33	477	159	6	-26	21	27	30	24
V	60	68	15	431	159	3	-32	27	30	36	21
V	40	89	31	329	156	11	-23	25	28	49	27
V	0	0	0	15	82	73	61	0	23	24	25
$											

TABLE H.9

#DM 8 27 84 19 15 0 543 640 642

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	20	-9999						0	0	0
V	280	18	16	593	183	-9999	-13	36	999	999	37
V	260	20	17	594	180	-9999	-4	33	41	33	36
V	240	26	10	632	171	4	-14	27	23	31	33
V	220	23	5	601	173	8	-23	31	31	30	27
V	200	23	20	625	167	5	-26	25	33	35	31
V	180	18	17	645	161	7	-26	34	31	31	25
V	160	21	17	615	160	7	-28	31	32	30	34
V	140	22	16	583	159	9	-34	30	31	28	31
V	120	26	28	585	160	6	-36	28	36	35	30
V	100	35	46	566	161	6	-28	26	28	34	28
V	80	58	27	461	163	6	-25	28	31	28	26
V	60	93	41	417	157	7	-33	28	29	29	28
V	40	134	36	274	165	16	-33	29	30	19	28
V	0	0	0	-9	88	72	60	0	34	32	29

$

TABLE H.10

#DM 8 27 84 19 29 56 368 452 446

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	17	-9999						0	0	0
V	280	17	15	590	176	-9999	-36	25	999	999	27
V	260	17	39	576	175	-9999	-29	22	38	31	25
V	240	17	24	-9999	-9999	-9999	-26	23	31	28	22
V	220	16	24	444	182	-9999	-31	22	79	66	23
V	200	12	-9999	594	160	-9999	-36	-9999	62	26	22
V	180	12	-9999	626	156	-9999	-46	-9999	19	26	15
V	160	13	25	702	158	-9999	-43	23	23	66	37
V	140	18	28	723	161	5	-38	28	19	33	23
V	120	31	0	668	158	6	-39	26	35	35	28
V	100	40	36	594	157	6	-35	22	27	29	26
V	80	54	33	556	155	5	-31	26	26	27	22
V	60	94	28	434	153	9	-34	24	22	27	26
V	40	131	9	333	154	9	-29	25	26	23	24
V	0	0	0	2	75	71	60	0	26	22	25

$

TABLE H.11

#DM 8 27 84 19 45 0 329 346 315

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	17	-9999						0	0	0
I	280	-9999	-9999						999	999	39
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	59	-9999						999	999	999
I	200	-9999	-9999						999	999	22
I	180	-9999	-9999						999	999	999
I	160	9	-9999						999	999	999
V	140	13	69	726	150	4	-34	40	94	39	26
V	120	12	29	687	155	3	-42	22	21	28	40
V	100	23	28	630	151	4	-38	19	23	32	22
V	80	38	28	581	152	6	-38	16	25	29	19
V	60	69	38	491	152	6	-31	19	23	26	16
V	40	123	28	384	154	5	-31	18	27	23	19
V	0	0	0	3	86	69	59	0	22	24	18
$											

TABLE H.12

#DM 8 27 84 19 59 59 310 317 288

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	10	-9999						999	999	999
V	160	9	-9999	740	152	-9999	-23	-9999	999	999	30
V	140	12	24	797	156	2	-33	21	23	22	8
V	120	27	43	768	150	6	-45	27	50	36	21
V	100	40	21	684	148	3	-41	25	27	28	27
V	80	51	25	638	147	6	-37	22	23	24	25
V	60	74	19	551	146	5	-34	26	26	29	22
V	40	131	25	415	149	8	-29	23	20	24	26
V	0	0	0	21	77	69	59	0	22	30	23
$											

TABLE H.13

#DM 8 27 84 20 14 59 386 292 364

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	25	-9999						999	999	999
I	260	-9999	-9999						999	999	23
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	-9999	-9999						999	999	999
I	160	-9999	-9999						999	999	999
I	140	25	34						157	124	92
V	120	51	15	799	147	3	-48	25	999	999	41
V	100	58	7	722	148	4	-44	23	20	27	25
V	80	66	13	631	146	4	-39	22	25	26	23
V	60	90	18	552	146	5	-36	23	23	25	22
V	40	144	21	403	148	5	-29	21	29	27	23
V	0	0	0	26	78	69	59	0	24	20	21
$											

TABLE H.14

#DM 8 27 84 20 30 1 395 298 394

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	52	-9999						999	999	999
I	260	-9999	-9999						999	999	19
I	240	33	-9999						999	999	999
I	220	-9999	-9999						999	999	44
I	200	-9999	-9999						999	999	69
I	180	32	-9999						999	999	999
I	160	-9999	-9999						38	97	28
I	140	43	26						999	999	999
V	120	60	7	820	150	3	-49	23	33	82	41
V	100	63	16	740	150	5	-44	25	32	28	23
V	80	80	23	683	151	7	-48	23	27	35	25
V	60	118	28	549	152	4	-43	20	25	54	23
V	40	157	10	404	151	7	-36	21	31	26	20
V	0	0	0	18	73	68	59	0	27	27	21
$											

TABLE H.15

#DM	8	27	84	20	45	1	382	398	418		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	38	-9999						0	0	0
I	280	-9999	-9999						999	999	62
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	32	-9999						999	999	999
V	200	35	12	952	153	-9999	-79	29	999	999	40
V	180	29	14	953	152	-9999	-61	34	31	25	29
V	160	31	15	-9999	-9999	-9999	-38	31	26	29	34
V	140	43	40	971	150	2	-51	36	105	34	31
V	120	57	27	868	149	3	-50	30	27	30	36
V	100	63	19	744	147	5	-45	22	28	28	30
V	80	70	34	707	148	3	-43	24	26	24	22
V	60	107	27	594	151	6	-36	22	26	29	24
V	40	153	23	447	153	6	-36	26	27	43	22
V	0	0	0	28	78	68	59	0	27	25	26
$											

TABLE H.16

#DM	8	27	84	20	59	58	497	475	544		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
V	200	26	15	982	156	-9999	-80	47	999	999	76
V	180	28	30	980	155	3	-61	34	23	30	47
V	160	32	18	973	155	2	-55	34	35	31	34
V	140	39	13	935	154	2	-43	28	31	27	34
V	120	56	19	868	151	3	-49	27	28	30	28
V	100	72	20	753	150	3	-42	22	29	29	27
V	80	82	27	666	150	4	-42	18	26	27	22
V	60	121	14	536	151	6	-40	21	26	22	18
V	40	159	13	388	154	5	-32	25	27	23	21
V	0	0	0	10	82	67	58	0	27	25	25
$											

TABLE H.17

$DM 8 27 84 21 14 59 405 376 424

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	22	-9999						999	999	999
V	200	25	34	864	165	-9999	-47	28	999	999	42
V	180	34	14	941	161	2	-40	29	21	38	28
V	160	35	23	959	156	3	-41	25	30	37	29
V	140	37	21	961	152	4	-40	28	29	26	25
V	120	51	27	862	150	3	-32	25	28	34	28
V	100	65	21	791	148	4	-31	21	26	27	25
V	80	80	11	689	145	5	-33	23	23	26	21
V	60	130	9	602	143	4	-26	24	24	23	23
V	40	156	13	433	146	7	-23	23	27	25	24
V	0	0	0	7	82	67	58	0	34	26	23
$											

TABLE H.18

$DM 8 27 84 21 30 1 496 468 519

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	16	-9999						999	999	999
I	200	24	14						999	999	16
V	180	35	15	852	167	5	-33	25	999	999	32
V	160	39	19	885	161	4	-36	33	26	30	25
V	140	53	15	914	155	3	-42	29	38	27	33
V	120	63	9	844	153	6	-35	28	27	27	29
V	100	77	17	738	148	2	-32	26	28	35	28
V	80	95	32	649	148	4	-33	27	24	20	26
V	60	127	25	551	146	6	-30	22	26	28	27
V	40	159	19	404	146	8	-15	29	29	29	22
V	0	0	0	20	74	67	58	0	32	29	29
$											

TABLE H.19

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
#DM	8	27	84	21	44	57	492	465	516		
S	** INV **	140	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	18	-9999						999	999	999
I	240	17	-9999						999	999	35
I	220	18	-9999						999	999	52
I	200	22	29						999	999	26
V	180	34	5	871	168	5	-39	29	93	35	31
V	160	47	20	898	161	5	-31	29	36	34	29
V	140	62	10	868	153	3	-38	32	34	29	29
V	120	56	19	795	150	3	-36	25	34	33	32
V	100	64	27	737	147	4	-35	22	27	30	25
V	80	75	6	656	145	4	-31	18	29	50	22
V	60	113	23	536	147	4	-33	25	19	24	18
V	40	155	27	419	143	7	-24	30	24	25	25
V	0	0	0	19	73	67	58	0	27	27	30
$											

TABLE H.20

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
#DM	8	27	84	21	59	56	468	402	480		
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	17	17						999	999	999
I	220	17	5						999	999	36
I	200	18	28						999	999	30
V	180	34	14	857	175	4	-38	24	999	999	33
V	160	55	28	-9999	-9999	-9999	-24	22	27	52	24
V	140	64	23	866	158	3	-34	26	27	86	22
V	120	60	23	797	149	13	-39	25	25	28	26
V	100	70	9	747	149	3	-39	23	46	68	25
V	80	91	21	674	148	5	-38	23	25	23	23
V	60	123	23	538	145	9	-34	20	24	31	23
V	40	132	21	413	145	5	-24	29	25	35	20
V	0	0	0	8	73	67	58	0	29	23	29
$											

TABLE H.21

#DM 8 27 84 22 14 59 493 484 569

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	160	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	19	-9999						999	999	999
I	240	21	-9999						999	999	38
I	220	26	7						999	999	34
V	200	26	33	820	176	4	-36	37	999	999	37
V	180	37	35	841	173	4	-42	26	28	46	37
V	160	67	8	846	170	4	-36	24	31	31	26
V	140	72	13	874	159	3	-41	25	32	33	24
V	120	77	21	841	154	5	-36	25	38	31	25
V	100	89	17	747	147	3	-35	26	26	29	25
V	80	103	23	652	146	3	-35	27	22	21	26
V	60	139	27	524	144	6	-28	24	25	24	27
V	40	145	22	412	141	9	-23	33	26	26	24
V	0	0	0	39	74	67	58	0	31	25	33
$											

TABLE H.22

#DM 8 27 84 22 29 57 461 501 530

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	22	-9999						999	999	999
I	260	21	-9999						999	999	49
I	240	20	9						999	999	48
V	220	22	15	861	185	-9999	-44	37	999	999	32
V	200	24	39	834	177	-9999	-38	38	27	43	37
V	180	33	44	-9999	-9999	-9999	-13	32	28	32	38
V	160	57	24	862	170	5	-36	28	83	36	32
V	140	64	45	868	162	5	-35	25	28	35	28
V	120	71	22	827	156	3	-35	22	30	33	25
V	100	93	27	734	152	5	-30	19	25	28	22
V	80	112	19	646	150	3	-30	26	23	27	19
V	60	137	21	506	149	8	-26	31	27	25	26
V	40	156	22	393	144	9	-28	30	23	25	31
V	0	0	0	25	71	66	58	0	30	31	30
$											

TABLE H.49

#DM 8 28 84 5 15 0 595 725 679

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	16	-9999						999	999	999
V	240	17	8	898	226	2	-1	23	999	999	16
V	220	21	20	840	223	3	-3	27	26	30	23
V	200	21	10	738	223	3	-4	23	28	26	27
V	180	19	11	712	220	5	-3	23	30	20	23
V	160	19	17	646	217	3	-5	26	26	21	23
V	140	20	23	598	213	5	-5	20	23	23	26
V	120	25	23	542	209	4	-5	23	24	22	20
V	100	42	46	511	199	7	-4	27	23	21	23
V	80	96	17	422	191	7	-12	21	24	21	27
V	60	103	33	313	184	13	-8	22	21	25	21
V	40	110	18	232	179	12	0	27	28	24	22
V	0	0	0	-46	144	61	54	0	26	22	27
$											

TABLE H.50

#DM 8 28 84 5 30 1 604 743 646

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
V	300	18	-9999	857	231	-9999	-20	-9999	0	0	0
I	280	-9999	-9999						25	25	22
V	260	16	-9999	-9999	-9999	-9999	-35	-9999	158	27	999
V	240	16	6	760	220	4	-22	29	138	33	23
V	220	19	13	738	215	4	-22	28	29	23	29
V	200	21	14	666	215	4	-19	19	28	27	28
V	180	19	37	599	212	4	-16	21	25	20	19
V	160	19	22	518	205	4	-18	18	21	22	21
V	140	17	12	525	194	6	-20	23	21	19	18
V	120	34	62	525	188	6	-21	22	27	23	23
V	100	73	29	464	182	5	-19	26	24	20	22
V	80	109	24	394	173	8	-13	21	25	28	26
V	60	113	13	309	172	9	-14	17	26	24	21
V	40	125	23	225	165	10	2	23	23	23	17
V	0	0	0	-34	120	60	53	0	21	18	23
$											

TABLE H.47

#DM 8 28 84 4 44 58 527 735 594

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
V	260	15	22	1027	223	-9999	-22	48	999	999	999
V	240	15	5	999	222	1	-7	31	29	35	48
V	220	16	19	930	217	4	-9	27	32	34	31
V	200	16	25	858	215	3	-11	29	67	26	27
V	180	16	31	747	215	4	-13	26	28	25	29
V	160	27	19	706	211	3	-9	23	25	26	26
V	140	31	9	633	207	5	-17	19	25	22	23
V	120	40	14	582	203	4	-14	21	29	21	19
V	100	56	28	568	192	4	-17	18	24	21	21
V	80	90	18	479	189	7	-17	27	27	22	18
V	60	118	7	377	180	8	-12	22	27	25	27
V	40	129	18	264	182	6	-14	19	23	22	22
V	0	0	0	-28	95	62	54	0	23	20	19
$											

TABLE H.48

#DM 8 28 84 4 59 59 569 726 666

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
V	260	15	-9999	972	223	-9999	-5	-9999	999	999	999
V	240	18	15	894	221	2	-21	27	14	36	24
V	220	19	24	867	221	3	-17	23	28	34	27
V	200	19	5	779	218	5	-23	26	26	29	23
V	180	16	21	739	216	5	-20	22	30	30	26
V	160	21	21	652	211	4	-15	20	23	25	22
V	140	30	27	614	210	4	-20	24	26	23	20
V	120	38	28	543	206	2	-15	17	25	24	24
V	100	58	40	504	198	6	-13	20	20	23	17
V	80	94	8	456	191	6	-14	25	27	25	20
V	60	144	24	356	184	8	-15	17	26	23	25
V	40	126	22	273	181	11	-11	26	28	19	17
V	0	0	0	-38	132	62	54	0	27	24	26
$											

TABLE H.45

#DM 8 28 84 4 14 58 478 578 522

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	19	-9999						0	0	0
I	280	16	-9999						26	75	34
I	260	15	-9999						999	999	19
V	240	19	14	933	218	4	-14	33	999	999	38
V	220	27	22	854	216	3	-13	26	28	40	33
V	200	29	19	764	211	4	-15	26	26	26	26
V	180	27	29	669	210	4	-13	22	32	30	26
V	160	22	59	576	200	6	-16	26	28	31	22
V	140	9	-9999	610	191	-9999	-1	-9999	62	30	26
V	120	30	-9999	592	200	-9999	-14	-9999	46	38	31
V	100	53	34	588	192	4	-12	19	26	19	30
V	80	91	23	498	187	6	-12	24	23	21	19
V	60	120	20	363	180	6	-9	17	27	18	24
V	40	121	29	281	171	14	-9	21	21	22	17
V	0	0	0	-30	111	61	54	0	23	24	21
$											

TABLE H.46

#DM 8 28 84 4 30 1 486 701 571

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	16	-9999						0	0	0
I	280	18	-9999						999	999	20
V	260	16	6	946	227	-9999	-28	32	110	31	33
V	240	16	14	-9999	-9999	-9999	-11	36	51	36	32
V	220	22	34	859	214	3	-23	29	72	33	36
V	200	25	16	736	212	3	-29	25	30	37	29
V	180	26	38	687	211	2	-23	23	28	28	25
V	160	26	35	614	206	4	-18	24	28	31	23
V	140	34	46	547	205	7	-26	20	25	22	24
V	120	27	97	-9999	-9999	-9999	-17	18	25	25	20
V	100	39	57	564	190	6	-23	25	77	26	18
V	80	58	32	506	181	6	-16	25	27	21	25
V	60	108	21	425	178	5	-23	18	22	24	25
V	40	135	10	309	179	9	-9	20	24	27	18
V	0	0	0	-26	89	62	54	0	25	24	20
$											

TABLE H.43

#DM 8 28 84 3 44 56 434 599 553

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	17	-9999						0	0	0
V	280	20	4	1141	230	-9999	1	37	999	999	68
V	260	30	102	1108	223	3	-18	35	34	38	37
V	240	24	25	1002	221	4	-8	30	34	50	35
V	220	19	8	878	215	2	-10	35	39	35	30
I	200	-9999	-9999						24	31	35
I	180	-9999	-9999						999	999	999
V	160	28	54	-9999	-9999	-9999	-8	29	999	999	999
V	140	47	22	739	207	4	-4	23	999	999	29
V	120	58	31	672	203	4	0	25	28	23	23
V	100	90	20	602	201	7	-10	20	24	27	25
V	80	104	26	455	195	7	-10	23	38	30	20
V	60	109	22	336	191	13	-7	30	31	25	23
V	40	99	25	245	198	18	-8	31	37	26	30
V	0	0	0	-7	164	63	56	0	31	24	31
$											

TABLE H.44

#DM 8 28 84 4 0 0 432 543 530

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	18	19						999	999	999
V	240	19	7	934	219	3	-18	25	79	36	35
V	220	18	23	811	216	2	-10	22	29	27	25
V	200	21	-9999	-9999	-9999	-9999	-4	-9999	24	26	22
I	180	-9999	-9999						91	29	21
V	160	15	-9999	-9999	-9999	-9999	-33	-9999	999	999	999
V	140	32	23	661	205	3	-3	24	999	999	60
V	120	52	32	591	204	5	-10	23	30	21	24
V	100	86	23	498	202	5	-6	21	30	22	23
V	80	101	30	394	196	7	-8	22	23	25	21
V	60	96	16	294	190	14	-9	18	23	24	22
V	40	93	26	203	194	12	-7	21	23	20	18
V	0	0	0	-37	214	62	55	0	24	19	21

TABLE H.41

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	15	-9999						999	999	999
I	220	17	-9999						999	999	25
I	200	14	-9999						999	999	38
I	180	-9999	-9999						999	999	24
I	160	17	15						999	999	999
V	140	39	15	836	191	2	-36	35	999	999	42
V	120	59	17	793	194	5	-25	21	32	36	35
V	100	83	32	756	191	5	-34	26	34	29	21
V	80	105	18	634	189	5	-29	36	31	28	26
V	60	118	22	497	181	9	-30	38	33	27	36
V	40	107	23	387	183	10	-31	38	35	41	38
V	0	0	0	62	108	64	57	0	38	36	38
$											

TABLE H.42

#DM 8 28 84 3 30 0 291 480 385

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	21	-9999						999	999	999
I	260	-9999	-9999						999	999	4
I	240	20	-9999						999	999	999
V	220	23	20	1005	213	-9999	-27	34	999	999	33
V	200	21	17	-9999	-9999	-9999	-11	35	24	42	34
V	180	15	-9999	-9999	-9999	-9999	-6	-9999	92	32	35
V	160	16	-9999	-9999	-9999	-9999	-23	-9999	999	999	70
V	140	21	28	759	199	3	-29	37	999	999	24
V	120	43	26	784	192	8	-32	26	74	26	37
V	100	97	46	725	188	6	-19	30	40	30	26
V	80	122	16	624	186	4	-27	29	33	28	30
V	60	108	19	492	174	9	-27	36	37	29	29
V	40	106	16	382	179	15	-16	39	44	29	36
V	0	0	0	41	97	64	56	0	43	33	39
$											

TABLE H.39

#DM 8 28 84 2 45 1 403 541 450

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	17	-9999						999	999	999
V	200	25	-9999	1008	207	3	-34	-9999	149	39	34
V	180	24	15	941	205	5	-30	28	19	39	27
V	160	24	15	860	197	6	-31	30	32	33	28
V	140	29	34	812	194	5	-27	30	48	29	30
V	120	40	28	762	191	7	-22	32	42	30	30
V	100	95	6	703	186	4	-39	33	44	27	32
V	80	131	11	547	185	6	-29	38	30	27	33
V	60	129	23	476	180	7	-32	38	33	27	38
V	40	115	31	353	183	17	-23	42	33	33	38
V	0	0	0	68	111	64	57	0	36	29	42
$											

TABLE H.40

#DM 8 28 84 2 59 59 383 451 450

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	24	-9999						193	34	999
I	260	-9999	-9999						999	999	40
I	240	18	-9999						155	57	999
I	220	-9999	-9999						999	999	23
I	200	32	-9999						999	999	999
V	180	32	31	977	203	3	-46	25	147	60	24
V	160	43	56	903	200	4	-40	28	29	41	25
V	140	53	39	832	196	6	-35	28	30	32	28
V	120	51	30	788	191	6	-30	27	32	36	28
V	100	90	35	753	184	5	-27	32	34	34	27
V	80	134	12	621	183	5	-33	34	34	28	32
V	60	128	17	510	180	12	-31	42	32	25	34
V	40	119	20	349	183	6	-20	43	44	33	42
V	0	0	0	61	104	64	57	0	37	29	43
$											

TABLE H.37

$DM 8 28 84 2 14 59 336 468 426

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	19	-9999						999	999	999
I	260	-9999	-9999						165	107	21
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
V	200	33	-9999	1076	203	-9999	-28	-9999	999	999	999
V	180	32	16	938	199	4	-34	39	68	49	38
V	160	33	6	909	192	6	-36	24	34	35	39
V	140	31	21	871	185	4	-40	33	41	30	24
V	120	80	37	795	186	5	-45	34	41	42	33
V	100	114	22	711	185	7	-36	36	37	37	34
V	80	123	19	677	179	6	-24	38	35	36	36
V	60	120	21	504	178	10	-20	43	41	31	38
V	40	115	23	385	177	11	-22	43	39	41	43
V	0	0	0	64	103	64	57	0	29	28	43

$

TABLE H.38

$DM 8 28 84 2 30 0 380 508 501

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	22	-9999						999	999	999
I	260	19	-9999						148	89	50
I	240	-9999	-9999						131	80	35
I	220	20	-9999						999	999	999
V	200	28	10	1006	205	4	-30	35	999	999	28
V	180	24	13	916	200	9	-30	26	33	45	35
V	160	23	11	902	193	8	-34	28	43	33	26
V	140	32	16	805	190	7	-34	28	70	38	28
V	120	55	44	806	186	5	-32	26	49	31	28
V	100	126	4	727	187	6	-30	36	44	28	26
V	80	136	14	629	181	9	-35	34	36	27	36
V	60	125	20	438	178	10	-28	38	34	36	34
V	40	124	30	361	179	10	-18	43	44	36	38
V	0	0	0	60	110	64	57	0	41	38	43

$

TABLE H.35

#DM		8	28	84	1	44	57	409	517	425	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						81	88	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	26	46						999	999	95
I	200	29	28						129	110	51
V	180	27	21	923	191	8	-34	29	85	31	35
V	160	20	21	955	179	4	-41	36	34	45	29
V	140	33	23	844	181	4	-42	29	39	39	36
V	120	48	24	818	177	5	-36	28	31	31	29
V	100	80	24	759	177	3	-44	32	33	31	28
V	80	124	40	678	175	7	-39	36	30	25	32
V	60	141	27	540	171	9	-30	37	36	31	36
V	40	135	19	374	168	12	-16	43	36	32	37
V	0	0	0	55	89	64	57	0	41	32	43

TABLE H.36

#DM		8	28	84	1	59	59	431	511	508	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						37	93	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
V	220	37	22	1056	209	-9999	-42	31	999	999	999
V	200	35	4	997	199	6	-16	39	37	46	31
V	180	34	11	905	199	2	-31	31	52	41	39
V	160	29	33	919	183	3	-38	33	38	36	31
V	140	66	28	828	187	2	-39	32	42	41	33
V	120	95	7	771	184	4	-33	31	35	24	32
V	100	107	22	707	183	3	-33	35	29	30	31
V	80	114	24	607	177	5	-34	33	34	34	35
V	60	117	13	451	172	8	-23	33	31	31	33
V	40	120	8	341	174	15	-11	39	32	34	33
V	0	0	0	55	96	65	57	0	33	31	39

TABLE H.33

#DM		8	28	84	1	14	59	523	593	543	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						133	125	999
I	260	-9999	-9999						999	999	999
I	240	19	-9999						999	999	999
V	220	29	9	990	191	5	-50	33	999	999	52
V	200	33	21	921	190	7	-28	28	34	47	33
V	180	33	13	851	188	2	-37	27	40	34	28
V	160	31	10	796	182	4	-30	28	28	29	27
V	140	31	15	758	183	2	-25	23	29	30	28
V	120	26	25	739	175	3	-26	29	28	29	23
V	100	48	60	691	177	5	-40	21	29	25	29
V	80	126	5	574	177	5	-28	25	29	24	21
V	60	134	22	460	172	5	-21	20	25	27	25
V	40	140	19	372	168	8	-17	26	21	21	20
V	0	0	0	29	85	64	57	0	30	26	26
$											

TABLE H.34

#DM		8	28	84	1	29	57	404	519	447	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	16	-9999						999	999	999
I	220	22	11						121	50	33
V	200	22	-9999	1048	188	-9999	-18	-9999	167	65	40
V	180	33	21	959	187	7	-33	29	39	41	38
V	160	39	21	852	187	2	-33	33	54	37	29
V	140	42	32	853	183	5	-35	27	30	29	33
V	120	33	18	810	177	4	-36	23	36	30	27
V	100	55	37	776	178	5	-26	29	30	28	23
V	80	144	27	645	176	8	-29	29	26	30	29
V	60	160	23	506	174	6	-26	29	34	36	29
V	40	169	18	374	170	13	-17	32	33	26	29
V	0	0	0	49	84	64	57	0	33	31	32
$											

TABLE H.31

#DM 8 28 84 0 45 0 563 580 592

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						106	108	999
I	260	19	-9999						999	999	999
V	240	23	24	1197	196	-9999	-17	41	999	999	47
V	220	44	22	959	194	4	-39	34	66	59	41
V	200	43	16	884	191	3	-37	24	32	36	34
V	180	41	13	837	189	4	-31	29	27	32	24
V	160	41	23	756	189	3	-28	28	27	27	29
V	140	40	12	700	188	3	-25	28	25	29	28
V	120	35	26	679	181	3	-25	25	27	25	28
V	100	64	49	650	182	8	-26	24	30	27	25
V	80	134	20	536	177	6	-31	27	32	28	24
V	60	123	34	455	168	6	-28	28	27	33	27
V	40	116	24	355	170	10	-21	31	31	28	28
V	0	0	0	35	95	65	58	0	35	26	31
$											

TABLE H.32

#DM 8 28 84 1 .0 1 526 630 603

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	23	-9999						999	999	999
I	260	29	-9999						999	999	53
V	240	25	-9999	1115	197	3	-15	-9999	93	60	44
V	220	39	17	1034	191	3	-45	37	38	40	48
V	200	42	20	-9999	-9999	-9999	-14	33	33	34	37
V	180	38	15	855	188	2	-29	29	79	38	33
V	160	37	13	784	186	3	-29	25	31	30	29
V	140	36	4	733	185	3	-27	26	26	32	25
V	120	33	18	708	179	4	-25	26	26	27	26
V	100	45	50	695	179	4	-29	22	29	23	26
V	80	135	18	525	175	8	-24	24	30	24	22
V	60	157	19	439	171	7	-24	25	27	36	24
V	40	122	20	357	164	8	-18	29	28	26	25
V	0	0	0	32	88	65	57	0	29	27	29
$											

TABLE H.29

#DM		8	28	84	0	15	0	379	615	521	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	25	-9999						999	999	999
I	260	28	8						118	56	44
I	240	23	6						999	999	47
V	220	25	18	832	196	-9999	-32	32	93	39	39
V	200	26	33	808	191	3	-21	30	19	35	32
V	180	25	14	783	182	7	-28	25	25	36	30
V	160	22	19	-9999	-9999	-9999	-16	29	60	36	25
V	140	22	19	722	177	5	-21	24	74	24	29
V	120	48	14	696	179	5	-30	32	26	25	24
V	100	93	37	635	173	4	-27	32	27	23	32
V	80	94	18	567	168	4	-23	28	29	32	32
V	60	85	14	458	166	9	-22	29	27	29	28
V	40	103	26	379	173	12	-21	33	28	33	29
V	0	0	0	44	99	66	58	0	32	33	33
$											

TABLE H.30

#DM		8	28	84	0	30	0	521	675	682	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	25	-9999						999	999	999
I	260	30	4						999	999	35
V	240	31	17	1018	194	6	-40	33	110	48	40
V	220	35	18	916	192	5	-33	31	33	43	33
V	200	38	10	861	191	6	-34	33	36	34	31
V	180	37	14	775	188	2	-27	30	31	28	33
V	160	30	38	718	186	4	-26	24	30	24	30
V	140	25	14	681	183	4	-26	21	26	27	24
V	120	30	21	650	178	6	-25	26	30	29	21
V	100	62	12	636	175	7	-25	23	34	21	26
V	80	87	3	533	169	8	-28	23	33	27	23
V	60	93	10	459	167	4	-26	28	34	33	23
V	40	95	30	347	169	8	-25	31	28	24	28
V	0	0	0	50	95	65	58	0	29	30	31
$											

TABLE H.27

#DM 8 27 84 23 44 59 452 547 599

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	27	41						999	999	999
I	240	49	22						999	999	37
V	220	59	18	807	192	2	-37	28	79	45	36
V	200	54	11	741	188	4	-26	23	24	42	28
V	180	43	18	729	181	6	-24	28	27	26	23
V	160	31	22	745	172	5	-26	29	33	27	28
V	140	34	32	803	170	4	-31	35	29	29	29
V	120	69	18	784	168	6	-31	29	27	31	35
V	100	75	9	653	160	4	-30	30	31	36	29
V	80	89	22	589	160	5	-23	30	28	32	30
V	60	103	25	485	159	11	-26	30	28	30	30
V	40	126	14	346	161	14	-20	36	39	36	30
V	0	0	0	32	94	66	58	0	36	31	36

$

TABLE H.28

#DM 8 28 84 0 0 1 511 592 679

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	26	-9999						0	0	0
I	280	28	-9999						999	999	33
I	260	40	45						999	999	45
I	240	49	16						999	999	41
V	220	56	17	795	194	4	-21	26	127	44	26
V	200	50	12	749	191	10	-33	32	28	31	26
V	180	46	23	701	186	5	-32	23	36	33	32
V	160	41	29	677	183	5	-30	26	25	29	23
V	140	52	35	683	180	4	-26	27	33	32	26
V	120	74	17	705	174	7	-28	35	26	21	27
V	100	93	7	679	167	5	-32	25	33	32	35
V	80	84	19	590	160	4	-32	29	27	35	25
V	60	90	20	470	157	7	-24	34	33	29	29
V	40	112	34	393	160	10	-28	33	34	25	34
V	0	0	0	45	101	66	58	0	40	25	33

TABLE H.25

$DM 8 27 84 23 14 56 407 472 542

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	24	-9999						0	0	0
I	280	22	-9999						999	999	28
I	260	20	-9999						999	999	36
I	240	-9999	-9999						999	999	58
I	220	19	-9999						999	999	77
I	200	25	-9999						999	999	43
V	180	24	16	846	181	-9999	-31	32	999	999	39
V	160	42	42	859	175	5	-29	27	30	36	32
V	140	66	11	828	168	4	-29	26	35	31	27
V	120	78	24	741	161	4	-31	20	29	30	26
V	100	84	13	644	159	3	-28	25	28	36	20
V	80	87	16	594	157	4	-26	27	26	28	25
V	60	108	10	456	155	7	-16	28	32	29	27
V	40	134	39	349	156	15	-14	32	32	24	28
V	0	0	0	13	80	66	57	0	33	30	32
$											

TABLE H.26

$DM 8 27 84 23 29 58 359 527 579

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	26	-9999						999	999	999
I	260	19	-9999						999	999	58
I	240	28	39						999	999	43
I	220	35	7						999	999	48
I	200	38	39						999	999	38
V	180	30	47	764	183	-9999	-23	31	107	32	24
V	160	26	45	-9999	-9999	-9999	-13	27	35	29	31
V	140	45	25	831	166	4	-35	31	93	33	27
V	120	73	18	732	163	6	-31	26	34	30	31
V	100	79	12	674	159	5	-30	31	36	37	26
V	80	85	27	573	159	6	-17	33	32	30	31
V	60	108	14	497	158	9	-17	37	38	32	33
V	40	136	28	385	157	11	-14	26	38	36	37
V	0	0	0	27	85	66	58	0	42	30	26
$											

TABLE H.23

#DM 8 27 84 22 45 1 427 485 541

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	26	-9999						0	0	0
I	280	27	-9999						999	999	59
I	260	21	-9999						185	59	38
I	240	18	-9999						999	999	39
I	220	18	27						999	999	42
I	200	22	45						999	999	35
I	180	30	20						999	999	38
V	160	37	22	886	171	3	-27	29	147	37	36
V	140	63	29	932	164	4	-35	30	34	31	29
V	120	93	6	842	160	2	-39	29	35	31	30
V	100	101	18	741	156	5	-27	28	28	28	29
V	80	119	2	653	154	4	-31	22	25	24	28
V	60	151	21	508	153	6	-22	27	31	24	22
V	40	170	19	371	148	9	-17	31	23	26	27
V	0	0	0	8	78	66	57	0	32	33	31
$											

TABLE H.24

#DM 8 27 84 23 0 0 401 441 510

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	26	15						0	0	0
I	280	22	17						999	999	35
I	260	20	-9999						999	999	35
I	240	16	-9999						999	999	17
I	220	19	20						999	999	43
I	200	20	-9999						999	999	41
I	180	23	39						999	999	56
I	160	69	42						158	31	42
V	140	87	24	904	168	5	-32	28	84	24	28
V	120	96	14	787	160	6	-28	27	32	36	28
V	100	96	14	676	158	4	-22	25	35	35	27
V	80	103	24	598	158	5	-28	27	26	30	25
V	60	127	15	486	158	5	-12	24	32	24	27
V	40	139	15	343	156	7	-17	31	30	24	24
V	0	0	0	3	81	66	57	0	30	26	31
$											

TABLE H.51

#DM 8 28 84 5 44 58 515 711 605

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
V	300	22	-9999	735	230	-9999	-44	-9999	0	0	0
V	280	16	8	-9999	-9999	-9999	-2	29	10	19	33
V	260	17	-9999	769	221	-9999	-25	-9999	117	33	29
V	240	15	21	759	221	-9999	-18	21	31	33	22
V	220	14	6	764	219	-9999	-23	24	35	28	21
V	200	16	1	796	215	11	-27	24	34	30	24
V	180	24	12	730	215	5	-23	21	44	30	24
V	160	26	15	624	209	5	-16	19	38	21	21
V	140	26	13	553	201	5	-20	18	28	23	19
V	120	25	18	564	192	4	-15	17	25	25	18
V	100	26	25	568	182	5	-23	22	29	25	17
V	80	70	11	555	180	5	-26	21	32	25	22
V	60	108	23	433	172	5	-14	19	19	31	21
V	40	145	24	341	173	7	-10	25	24	25	19
V	0	0	0	7	85	60	53	0	16	20	25

$

TABLE H.52

#DM 8 28 84 5 59 55 477 511 541

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	31	14						0	0	0
I	280	-9999	-9999						999	999	27
I	260	-9999	-9999						190	158	999
I	240	22	-9999						999	999	999
V	220	18	7	832	220	2	-11	27	999	999	55
V	200	21	27	785	217	4	-8	22	29	28	27
V	180	29	36	724	213	3	-3	31	33	18	22
V	160	35	26	671	206	3	-8	27	31	18	31
V	140	40	29	598	201	4	-16	25	27	24	27
V	120	27	42	570	190	2	-14	15	25	23	25
V	100	29	45	607	180	4	-8	24	24	21	15
V	80	84	67	567	180	4	-5	16	23	23	24
V	60	149	9	407	171	6	-13	22	20	25	16
V	40	155	15	281	172	13	-4	23	21	27	22
V	0	0	0	-12	116	61	53	0	26	26	23

TABLE H.53

#DM 8 28 84 6 14 58 488 522 568

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	25	17						0	0	0
I	280	23	-9999						129	37	25
I	260	-9999	-9999						999	999	22
I	240	20	-9999						999	999	999
V	220	31	23	676	219	4	0	22	999	999	34
V	200	31	24	579	215	4	-5	25	26	30	22
V	180	28	1	507	208	6	-7	21	25	22	25
V	160	33	13	488	201	5	-4	19	27	63	21
V	140	29	16	478	194	7	0	21	25	20	19
V	120	40	26	481	188	7	-4	22	22	25	21
V	100	76	20	421	176	7	-2	18	27	19	22
V	80	102	22	358	169	7	0	16	24	28	18
V	60	109	18	248	162	10	-3	19	19	19	16
V	40	104	27	129	143	24	5	14	19	20	19
V	0	0	0	49	441	62	55	0	25	24	14

$

TABLE H.54

#DM 8 28 84 6 29 59 537 641 621

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	21	22						0	0	0
V	280	19	18	597	231	-9999	6	26	83	95	24
I	260	-9999	-9999						22	31	26
I	240	-9999	-9999						999	999	999
V	220	27	67	-9999	-9999	-9999	4	27	999	999	999
V	200	28	30	616	210	7	1	25	118	37	27
V	180	30	33	574	205	5	4	25	29	27	25
V	160	34	7	497	193	4	6	22	27	31	25
V	140	27	21	499	191	5	3	21	22	23	22
V	120	30	24	570	184	5	-7	22	29	28	21
V	100	61	15	469	169	6	2	22	27	25	22
V	80	85	13	402	165	5	-2	20	22	24	22
V	60	98	27	326	160	5	1	19	20	22	20
V	40	94	21	235	154	10	5	17	20	20	19
V	0	0	0	68	472	62	55	0	19	20	17

$

TABLE H.55

#DM 8 28 84 6 45 0 565 800 657

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	19	-9999						0	0	0
I	280	-9999	-9999						999	999	8
I	260	19	-9999						999	999	999
I	240	34	15						999	999	19
V	220	34	20	600	218	11	-6	23	113	20	27
V	200	34	21	551	209	4	-9	19	43	30	23
V	180	33	23	501	201	5	0	23	26	22	19
V	160	32	29	482	195	6	-3	24	26	21	23
V	140	30	23	497	189	4	0	20	23	25	24
V	120	53	44	576	181	7	-4	19	22	21	20
V	100	77	13	474	170	4	-6	22	29	24	19
V	80	85	20	401	165	4	0	18	19	18	22
V	60	87	6	299	163	6	-3	16	19	22	18
V	40	80	28	212	157	10	2	17	20	19	16
V	0	0	0	47	482	62	55	0	21	20	17
$											

TABLE H.56

#DM 8 28 84 6 59 59 472 746 638

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
I	300	18	-9999						0	0	0
I	280	-9999	-9999						999	999	17
I	260	16	-9999						999	999	999
I	240	15	23						999	999	12
V	220	15	19	630	213	8	-3	27	136	30	26
V	200	17	11	580	203	4	-6	23	62	23	27
V	180	19	7	551	198	9	-5	19	23	19	23
V	160	20	18	559	188	4	-4	18	34	24	19
V	140	24	9	603	179	4	-10	18	27	20	18
V	120	56	50	624	177	6	-11	28	26	24	18
V	100	94	14	532	170	4	-9	19	25	27	28
V	80	79	20	475	162	4	-11	19	25	27	19
V	60	93	9	401	163	5	-6	19	23	24	19
V	40	102	23	294	157	10	0	19	21	23	19
V	0	0	0	104	495	62	56	0	23	20	19
$											

TABLE H.57

#DM 8 28 84 7 15 1 341 657 545

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	17	-9999						999	999	999
I	260	18	-9999						999	999	24
V	240	14	16	607	214	-9999	-17	31	999	999	24
V	220	15	1	-9999	-9999	-9999	-11	29	31	25	31
V	200	16	21	588	203	5	-16	22	111	26	29
V	180	14	3	578	198	4	-17	25	23	29	22
V	160	13	3	-9999	-9999	-9999	-4	20	25	26	25
V	140	16	30	-9999	-9999	-9999	-3	17	107	23	20
V	120	41	36	662	184	4	-17	24	91	20	17
V	100	101	25	597	171	4	-21	26	23	22	24
V	80	121	19	494	164	4	-15	23	25	27	26
V	60	107	18	412	163	3	-11	24	27	22	23
V	40	121	21	296	162	9	-5	24	28	22	24
V	0	0	0	103	438	62	56	0	27	23	24

$

TABLE H.58

#DM 8 28 84 7 29 59 325 607 484

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	20	-9999						204	71	999
I	260	-9999	-9999						130	29	13
I	240	15	-9999						152	67	999
I	220	-9999	-9999						999	999	24
I	200	15	27						999	999	999
V	180	15	7	596	210	6	-11	23	999	999	28
V	160	13	14	-9999	-9999	-9999	-4	22	65	27	23
V	140	16	46	-9999	-9999	-9999	-7	25	107	18	22
V	120	88	48	593	200	22	-12	28	110	23	25
V	100	133	19	507	182	5	-12	25	78	25	28
V	80	116	35	445	174	5	-8	26	28	22	25
V	60	109	13	372	169	9	-3	28	22	27	26
V	40	123	1	259	167	14	-2	32	32	26	28
V	0	0	0	65	112	61	56	0	28	23	32

$

TABLE H.59

#DM 8 28 84 7 44 58 297 486 412

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	16	-9999						0	0	0
V	280	-9999	-9999	1612	280	-9999	-9999	-9999	999	999	10
I	260	-9999	-9999						59	67	999
I	240	-9999	-9999						999	999	999
V	220	12	-9999	-9999	-9999	-9999	-4	-9999	999	999	999
V	200	15	15	-9999	-9999	-9999	-1	23	163	25	25
V	180	14	58	-9999	-9999	-9999	5	41	999	999	23
V	160	20	31	-9999	-9999	-9999	-1	34	133	22	41
V	140	122	45	-9999	-9999	-9999	-7	39	999	999	34
V	120	148	20	516	190	8	-12	32	95	29	39
V	100	106	24	410	182	7	-3	38	32	26	32
V	80	82	25	371	177	13	-12	35	31	30	38
V	60	70	40	320	180	15	0	39	32	32	35
V	40	82	22	222	183	19	12	37	38	30	39
V	0	0	0	37	119	62	56	0	34	23	37

$

TABLE H.60

#DM 8 28 84 7 59 53 302 515 300

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	23	36	623	232	-9999	9	26	0	0	0
I	280	-9999	-9999						23	21	26
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
V	220	12	-9999	-9999	-9999	-9999	13	-9999	165	26	999
V	200	11	-9999	-9999	-9999	-9999	3	-9999	999	999	17
V	180	12	-9999	-9999	-9999	-9999	-5	-9999	999	999	15
V	160	101	-9999	-9999	-9999	-9999	-13	-9999	999	999	27
V	140	147	33	559	192	7	-12	36	999	999	22
V	120	124	13	469	191	6	-9	28	41	36	36
V	100	89	38	429	186	9	-1	33	33	31	28
V	80	46	30	317	180	13	-5	39	34	29	33
V	60	38	24	336	165	12	-15	40	38	27	39
V	40	37	22	283	170	29	-29	46	37	31	40
V	0	0	0	98	145	62	57	0	41	36	46

$

TABLE H.61

#DM 8 28 84 8 15 1 278 423 300

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	-9999	-9999						999	999	999
I	160	78	-9999						999	999	999
V	140	141	39	545	196	8	-6	41	99	32	44
V	120	114	17	372	195	12	2	36	40	41	41
V	100	77	52	300	192	14	-4	37	38	33	36
V	80	48	51	226	203	27	0	39	33	33	37
V	60	31	20	261	208	28	8	50	42	35	39
V	40	34	36	211	222	39	30	54	46	36	50
V	0	0	0	43	152	63	57	0	51	39	54
$											

TABLE H.62

#DM 8 28 84 8 29 55 353 409 365

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	17	-9999						0	0	0
I	280	17	20						141	168	27
I	260	40	-9999						181	22	21
I	240	-9999	-9999						147	142	62
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	64	-9999						999	999	999
I	160	103	62						999	999	54
V	140	104	28	509	199	7	-14	38	99	27	63
V	120	89	40	419	196	10	-8	37	34	35	38
V	100	67	40	380	195	11	-12	33	30	39	37
V	80	51	46	303	182	15	-14	39	33	28	33
V	60	47	46	328	186	12	-11	44	37	32	39
V	40	46	30	250	187	24	-18	38	33	34	44
V	0	0	0	100	162	63	57	0	33	34	38
$											

TABLE H.63

#DM 8 28 84 8 44 59 427 521 519

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	30	42	657	232	8	0	22	0	0	0
V	280	27	24	562	226	5	6	25	28	30	22
V	260	24	31	-9999	-9999	-9999	10	22	22	22	25
V	240	27	28	-9999	-9999	-9999	11	20	85	22	22
V	220	19	-9999	-9999	-9999	-9999	2	-9999	999	999	20
V	200	30	-9999	-9999	-9999	-9999	-12	-9999	189	17	23
V	180	69	38	-9999	-9999	-9999	5	51	999	999	41
V	160	75	23	-9999	-9999	-9999	10	39	999	999	51
V	140	78	21	502	200	9	-14	36	80	30	39
V	120	60	33	459	196	8	-5	36	30	29	36
V	100	44	25	386	193	15	-9	42	30	28	36
V	80	35	20	417	183	15	-8	34	41	28	42
V	60	48	29	308	191	22	-21	43	45	41	34
V	40	65	27	253	183	9	5	55	62	42	43
V	0	0	0	125	161	64	58	0	36	46	55
$											

TABLE H.64

#DM 8 28 84 9 0 0 519 690 653

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	180	0	0	0	0	0	0			
V	300	34	35	651	235	4	7	20	0	0	0
V	280	32	13	572	230	5	14	23	27	24	20
V	260	32	28	547	230	5	7	22	27	23	23
V	240	36	7	539	230	8	10	24	23	26	22
V	220	43	39	575	225	6	8	33	34	29	24
V	200	53	37	602	222	9	15	39	37	32	33
V	180	60	64	539	216	8	0	42	39	36	39
V	160	61	31	505	211	10	-2	37	30	38	42
V	140	43	13	429	212	12	0	38	39	38	37
V	120	35	33	388	205	16	-11	49	39	39	38
V	100	35	55	323	196	25	-23	44	42	35	49
V	80	46	40	333	188	22	-16	46	47	37	44
V	60	60	42	301	187	18	-20	58	45	36	46
V	40	86	25	259	198	22	-14	51	43	33	58
V	0	0	0	124	183	64	58	0	44	33	51
$											

TABLE H.65

$DM 8 28 84 9 14 57 357 418 475

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	200	0	0	0	0	0	0			
V	300	34	36	595	235	3	3	26	0	0	0
V	280	28	21	669	237	-9999	-5	25	35	25	26
V	260	23	45	582	235	3	-11	25	25	39	25
V	240	29	38	557	234	6	-12	30	34	21	25
V	220	87	3	523	233	11	-12	29	39	31	30
V	200	106	35	389	227	11	-19	23	41	25	29
V	180	74	27	329	216	8	-19	29	32	28	23
V	160	41	43	257	208	14	-14	34	30	32	29
V	140	37	60	243	195	12	-13	44	31	31	34
V	120	38	57	255	197	8	-16	48	38	36	44
V	100	40	24	256	191	17	-18	44	66	39	48
V	80	59	34	241	219	21	-23	43	40	39	44
V	60	76	42	252	214	17	-16	48	38	39	43
V	40	132	48	157	196	28	-7	41	46	41	48
V	0	0	0	128	179	65	59	0	47	32	41
$											

TABLE H.66

$DM 8 28 84 9 29 58 578 651 756

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	260	0	0	0	0	0	0			
V	300	57	97	635	234	4	0	50	0	0	0
V	280	87	84	768	240	8	6	59	37	37	50
V	260	122	59	632	237	8	0	59	55	49	59
V	240	109	51	525	229	11	1	48	47	44	59
V	220	86	37	381	227	12	-14	53	45	41	48
V	200	81	33	289	216	17	-3	52	35	39	53
V	180	59	23	232	227	12	0	57	42	34	52
V	160	57	20	231	214	23	1	57	38	38	57
V	140	55	39	179	205	24	-1	54	33	43	57
V	120	62	49	243	201	28	2	57	31	41	54
V	100	76	40	177	190	43	2	61	43	40	57
V	80	85	48	182	164	65	-5	55	51	44	61
V	60	117	42	246	162	31	-1	60	46	45	55
V	40	130	37	153	165	47	-3	69	43	43	60
V	0	0	0	133	177	66	60	0	56	42	69
$											

TABLE H.67

#DM 8 28 84 9 44 59 670 713 841

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	280	0	0	0	0	0	0			
V	300	122	40	622	240	10	13	52	0	0	0
V	280	118	39	499	243	13	5	53	52	54	52
V	260	99	47	342	241	16	3	40	48	41	53
V	240	73	22	250	232	25	-6	38	40	30	40
V	220	53	34	202	231	18	-16	42	42	35	38
V	200	40	33	144	214	29	-21	39	34	33	42
V	180	36	20	122	199	44	-38	43	35	33	39
V	160	38	20	112	206	62	-42	46	39	33	43
V	140	37	20	131	168	49	-46	50	69	42	46
V	120	37	27	153	155	46	-43	40	31	45	50
V	100	47	36	157	154	58	-58	45	31	36	40
V	80	52	28	192	134	42	-65	43	41	38	45
V	60	61	34	226	140	32	-57	44	36	45	43
V	40	109	46	139	181	16	-48	49	41	45	44
V	0	0	0	144	181	66	60	0	54	42	49
$											

TABLE H.68

#DM 8 28 84 10 0 0 719 760 875

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	300	0	0	0	0	0	0			
V	300	80	40	379	234	12	-3	36	0	0	0
V	280	74	37	305	237	14	-5	27	28	40	36
V	260	57	34	219	223	18	-14	36	33	31	27
V	240	53	59	203	227	28	-23	38	32	26	36
V	220	47	24	163	206	36	-28	40	51	36	38
V	200	40	31	143	185	43	-37	43	38	38	40
V	180	41	14	132	180	52	-44	44	35	35	43
V	160	36	17	70	167	67	-51	47	41	38	44
V	140	39	38	117	155	62	-55	42	54	41	47
V	120	43	40	109	147	60	-48	47	55	37	42
V	100	46	69	120	149	55	-49	44	53	46	47
V	80	60	101	103	148	58	-58	42	48	43	44
V	60	75	79	153	154	53	-54	38	50	35	42
V	40	122	48	92	168	51	-36	33	47	37	38
V	0	0	0	163	200	67	61	0	43	29	33
$											

TABLE H.69

#DM		8	28	84	10	15	1	699	773	824	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	300	0	0	0	0	0	0			
V	300	67	50	290	231	12	-26	32	0	0	0
V	280	58	30	211	225	27	-31	34	36	29	32
V	260	50	54	181	210	35	-32	34	35	30	34
V	240	44	25	128	198	37	-33	28	27	28	34
V	220	39	44	114	180	40	-51	32	28	32	28
V	200	35	18	100	180	47	-40	39	31	29	32
V	180	33	35	141	160	41	-44	45	34	31	39
V	160	38	37	109	151	48	-46	45	39	34	45
V	140	44	66	130	154	47	-41	55	40	36	45
V	120	48	51	186	148	51	-43	67	40	45	55
V	100	56	60	-9999	-9999	-9999	-39	66	50	63	67
V	80	91	78	141	160	54	-27	64	46	82	66
V	60	121	38	157	176	46	-15	61	47	45	64
V	40	160	27	129	188	49	-10	54	44	50	61
V	0	0	0	128	192	68	61	0	37	35	54
$											

TABLE H.70

#DM		8	28	84	10	46	30	10	0	0	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	-9999	-9999						999	999	999
I	160	-9999	-9999						999	999	999
I	140	-9999	-9999						999	999	999
I	120	-9999	-9999						999	999	999
I	100	-9999	-9999						999	999	999
I	80	-9999	-9999						999	999	999
I	60	-9999	-9999						999	999	999
I	40	-9999	-9999						999	999	999
V	0	0	0	150	169	70	63	0	999	999	999
$											

TABLE H.71

#DM	8	28	84	10	59	59	303	415	565		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	40	13	195	186	56	-21	57	0	0	0
V	280	46	27	-9999	-9999	-9999	-12	68	81	40	57
V	260	38	17	409	275	9	-30	77	126	59	68
V	240	40	37	462	283	-9999	-31	84	66	86	77
V	220	44	12	467	252	-9999	-8	85	61	61	84
V	200	49	47	530	255	12	-2	87	59	50	85
V	180	67	53	686	266	-9999	41	69	56	52	87
V	160	69	38	677	264	5	6	80	47	46	69
V	140	74	16	538	272	4	28	77	52	46	80
V	120	75	30	563	261	13	-7	71	52	76	77
V	100	99	45	491	264	25	6	69	51	58	71
V	80	146	41	552	250	8	34	64	48	74	69
V	60	167	33	366	250	19	27	70	52	52	64
V	40	200	22	223	225	37	9	63	47	50	70
V	0	0	0	74	177	71	63	0	44	46	63
$											

TABLE H.72

#DM	8	28	84	11	14	59	299	332	371		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
V	300	64	197	447	260	12	31	63	0	0	0
V	280	33	40	404	250	-9999	28	66	85	46	63
V	260	34	15	463	230	11	54	68	57	57	66
V	240	62	133	373	231	24	68	71	43	55	68
V	220	44	27	433	231	19	75	54	57	53	71
V	200	49	23	420	223	16	58	67	40	51	54
V	180	46	33	332	228	-9999	26	59	53	50	67
V	160	53	46	430	219	12	16	65	43	48	59
V	140	53	68	386	247	16	7	65	62	38	65
V	120	76	57	337	234	46	10	66	51	51	65
V	100	104	22	326	225	20	15	64	72	58	66
V	80	98	51	289	231	17	-16	62	65	54	64
V	60	140	29	330	228	31	-9	58	78	41	62
V	40	177	-9999	189	232	-9999	-2	-9999	62	48	58
V	0	0	0	135	193	71	64	0	53	40	64
$											

TABLE H.73

#DM		8	28	84	11	29	59	428	536	772	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	26	22						0	0	0
V	280	26	18	401	232	-9999	2	75	100	52	67
V	260	29	49	447	224	21	12	75	59	60	75
V	240	35	47	362	248	-9999	7	83	63	48	75
V	220	42	8	473	237	11	28	68	47	47	83
V	200	42	39	453	233	12	16	74	46	47	68
V	180	49	26	476	226	8	22	74	44	49	74
V	160	58	52	333	225	31	17	80	45	49	74
V	140	70	61	321	204	30	23	71	43	64	80
V	120	87	54	253	234	19	15	77	48	54	71
V	100	105	18	257	216	39	18	73	47	47	77
V	80	129	22	210	217	41	7	72	68	51	73
V	60	154	33	98	177	38	-19	67	61	49	72
V	40	182	24	83	166	43	-18	55	54	39	67
V	0	0	0	161	153	72	64	0	52	44	55
$											

TABLE H.74

#DM		8	28	84	11	45	0	404	554	704	
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	24	17						0	0	0
V	280	25	28	261	154	-9999	-33	51	999	999	46
V	260	23	28	-9999	-9999	-9999	-44	58	27	74	51
V	240	26	25	283	121	18	-48	55	999	999	58
V	220	32	64	-9999	-9999	-9999	-53	59	47	36	55
V	200	32	51	-9999	-9999	-9999	-65	56	87	37	59
V	180	32	70	-9999	-9999	-9999	-73	63	101	37	56
V	160	38	67	369	106	19	-63	57	110	58	63
V	140	42	90	356	104	15	-65	52	34	42	57
V	120	53	64	352	102	16	-61	55	36	41	52
V	100	59	77	368	121	26	-72	52	37	34	55
V	80	62	86	402	104	7	-61	56	44	77	52
V	60	71	33	378	104	15	-53	60	38	37	56
V	40	99	17	323	123	-9999	-29	53	42	45	60
V	0	0	0	95	158	73	64	0	38	37	53
$											

TABLE H.75

#DM		8	28	84	11	59	59	384	448	557	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	28	30	119	193	-9999	-9	55	0	0	0
V	280	29	28	163	226	-9999	1	71	57	53	55
V	260	25	28	86	184	-9999	-24	68	74	85	71
V	240	31	75	20	141	109	-25	67	51	51	68
V	220	31	73	144	222	59	-26	75	64	49	67
V	200	30	88	393	221	24	-52	75	83	81	75
V	180	42	83	515	217	14	-16	82	62	56	75
V	160	41	67	442	197	30	-22	93	64	50	82
V	140	57	73	311	183	21	-1	88	79	49	93
V	120	69	57	332	178	42	-27	80	58	65	88
V	100	77	60	333	174	36	-21	81	77	49	80
V	80	97	47	281	169	43	-19	70	78	65	81
V	60	147	31	247	159	29	8	79	61	46	70
V	40	176	17	135	188	-9999	14	72	42	58	79
V	0	0	0	102	146	74	65	0	54	33	72
$											

TABLE H.76

#DM		8	28	84	12	14	59	347	413	448	
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	22	32	173	173	-9999	-16	41	0	0	0
V	280	24	21	-9999	-9999	-9999	0	54	47	74	41
V	260	28	46	141	150	-9999	5	65	87	36	54
V	240	23	29	302	199	36	-40	59	40	39	65
V	220	24	66	-9999	-9999	-9999	-23	70	68	82	59
V	200	24	22	326	144	26	-43	61	999	999	70
V	180	25	43	122	147	71	-55	59	28	47	61
V	160	26	44	-9999	-9999	-9999	-62	52	69	60	59
V	140	35	39	355	121	21	-72	52	94	56	52
V	120	51	35	339	138	32	-58	54	46	54	52
V	100	60	63	357	130	27	-64	60	42	73	54
V	80	64	56	365	130	27	-54	54	39	48	60
V	60	83	103	335	124	24	-47	70	47	54	54
V	40	170	-9999	339	132	-9999	3	-9999	47	44	70
V	0	0	0	116	137	75	65	0	44	34	50
$											

TABLE H.77

#DM 8 28 84 12 29 59 434 452 581

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	120	0	0	0	0	0	0			
V	300	25	27	36	178	79	-34	74	0	0	0
V	280	24	72	138	168	54	-57	67	54	40	74
V	260	30	71	50	162	75	-40	62	48	65	67
V	240	30	48	85	132	68	-36	70	46	72	62
V	220	31	58	110	186	46	-44	74	41	44	70
V	200	37	73	163	159	49	-57	69	48	45	74
V	180	36	57	274	112	22	-62	68	49	61	69
V	160	40	79	252	118	34	-55	63	45	50	68
V	140	55	79	236	143	37	-45	65	44	53	63
V	120	67	57	186	122	52	-37	67	44	60	65
V	100	82	54	249	123	28	-31	63	54	42	67
V	80	85	54	166	180	45	-34	61	53	50	63
V	60	151	35	-9999	-9999	-9999	0	75	70	48	61
V	40	164	34	161	192	52	-4	65	93	60	75
V	0	0	0	121	179	75	65	0	71	61	65

$

TABLE H.78

#DM 8 28 84 12 46 49 7 0 0

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	-9999	-9999						999	999	999
I	240	-9999	-9999						999	999	999
I	220	-9999	-9999						999	999	999
I	200	-9999	-9999						999	999	999
I	180	-9999	-9999						999	999	999
I	160	-9999	-9999						999	999	999
I	140	-9999	-9999						999	999	999
I	120	-9999	-9999						999	999	999
I	100	-9999	-9999						999	999	999
I	80	-9999	-9999						999	999	999
I	60	-9999	-9999						999	999	999
I	40	-9999	-9999						999	999	999
V	0	0	0	216	138	77	66	0	999	999	999

$

TABLE H.105

*DM 8 29 84 12 45 0 88 89 102

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	27	-9999						0	0	0
V	280	-9999	-9999	200	144	-9999	-9999	-9999	999	999	43
V	260	50	-9999	491	164	-9999	31	-9999	14	41	999
V	240	58	-9999	378	178	-9999	-43	-9999	22	56	60
V	220	51	-9999	-9999	-9999	-9999	-2	-9999	25	46	58
V	200	51	-9999	407	163	-9999	15	-9999	28	137	56
V	180	84	-9999	390	181	-9999	-25	-9999	58	46	56
V	160	81	-9999	582	155	-9999	-18	-9999	45	75	79
V	140	149	-9999	-9999	-9999	-9999	55	-9999	58	63	90
V	120	128	-9999	460	162	-9999	1	-9999	55	123	59
V	100	114	-9999	550	167	-9999	-66	-9999	40	44	80
V	80	92	-9999	423	136	-9999	-59	-9999	40	80	64
V	60	128	-9999	-9999	-9999	-9999	-35	-9999	49	42	57
V	40	100	-9999	-9999	-9999	-9999	-56	-9999	999	999	43
V	0	0	0	177	135	73	65	0	999	999	62
$											

TABLE H.103

#DM 8 29 84 11 15 1 545 633 688

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	25	31	501	227	13	21	72	0	0	0
V	280	24	8	-9999	-9999	-9999	37	61	76	56	72
V	260	25	20	469	228	22	29	68	116	45	61
V	240	27	45	373	228	30	55	54	78	50	68
V	220	28	32	368	223	39	22	71	58	65	54
V	200	29	57	349	219	86	13	79	90	63	71
V	180	32	69	282	237	31	16	77	80	93	79
V	160	47	43	425	206	30	55	62	84	80	77
V	140	65	115	235	194	57	51	63	100	47	62
V	120	45	24	323	198	45	2	81	85	78	63
V	100	56	64	295	232	23	12	64	104	66	81
V	80	64	34	250	170	48	7	63	53	60	64
V	60	72	39	217	173	29	-4	59	60	47	63
V	40	88	21	221	171	30	-5	49	54	41	59
V	0	0	0	129	158	70	63	0	45	44	49

$

TABLE H.104

#DM 8 29 84 11 30 0 491 630 692

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
V	300	20	27	229	190	33	-24	41	0	0	0
V	280	19	21	-9999	-9999	-9999	-7	46	37	42	41
V	260	20	9	230	187	39	-7	41	86	43	46
V	240	21	25	202	196	39	-16	50	50	43	41
V	220	21	15	213	190	39	-5	47	50	43	50
V	200	26	32	239	181	33	-10	48	48	36	47
V	180	27	33	243	179	33	-18	44	36	37	48
V	160	30	41	268	181	20	-5	52	41	44	44
V	140	32	43	292	178	32	-16	46	43	44	52
V	120	43	52	254	174	28	-12	47	46	46	46
V	100	54	48	249	162	36	-8	48	41	33	47
V	80	69	19	265	172	26	-13	49	46	37	48
V	60	84	57	281	173	17	-7	37	37	40	49
V	40	102	33	156	185	35	0	47	45	38	37
V	0	0	0	131	165	70	63	0	45	41	47

$

TABLE H.101

#DM	8	29	84	10	45	1	296	387	596	

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	28	21	1226	280	-9999	27	61	0	0	0
V	280	30	8	-9999	-9999	-9999	19	67	92	58	61
V	260	29	6	-9999	-9999	-9999	19	69	121	46	67
V	240	27	7	-9999	-9999	-9999	3	67	999	999	69
V	220	28	3	-9999	-9999	-9999	0	67	999	999	67
V	200	28	14	-9999	-9999	-9999	-16	71	999	999	67
V	180	29	33	-9999	-9999	-9999	-25	69	116	55	71
V	160	31	17	133	155	-9999	-18	71	129	64	69
V	140	30	48	183	163	53	-41	57	50	46	71
V	120	38	38	202	161	54	-29	68	56	57	57
V	100	43	28	223	144	50	-36	58	75	45	68
V	80	68	75	152	186	36	-21	58	63	49	58
V	60	118	32	133	189	45	3	58	44	56	58
V	40	127	36	143	182	46	-6	53	48	45	58
V	0	0	0	111	164	70	62	0	41	54	53
$											

TABLE H.102

#DM	8	29	84	10	59	59	414	558	671	

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0	0	0	0
I	300	30	40						999	999	78
I	280	31	31						112	87	66
I	260	29	24						129	90	48
I	240	32	20						145	42	55
I	220	33	39						123	35	51
I	200	37	36								
V	180	42	47	272	207	29	8	62	135	63	53
V	160	46	51	204	220	50	8	65	75	49	62
V	140	43	55	141	194	53	0	73	106	54	65
V	120	58	66	267	193	43	2	63	51	52	73
V	100	73	66	255	177	40	-7	64	75	51	63
V	80	99	49	216	182	42	1	55	50	41	64
V	60	142	40	241	217	41	1	55	77	46	55
V	40	158	29	153	208	53	12	47	57	47	55
V	0	0	0	93	159	71	63	0	50	42	47
$											

TABLE H.99

$DM	8	29	84	10	15	0	385	509	681		
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	27	12						0	0	0
I	280	29	18						113	56	65
I	260	32	17						123	42	55
I	240	32	35						143	51	55
V	220	34	41	250	242	57	0	58	999	999	61
V	200	49	83	-9999	-9999	-9999	-1	67	90	53	58
V	180	38	83	315	234	49	6	65	53	91	67
V	160	43	24	445	233	12	40	70	55	73	65
V	140	46	50	479	242	12	18	74	52	56	70
V	120	61	27	423	240	27	11	65	52	45	74
V	100	78	42	361	242	14	17	59	50	51	65
V	80	108	22	373	241	22	28	55	48	46	59
V	60	133	37	285	228	25	34	50	68	44	55
V	40	161	26	260	218	30	31	54	64	39	50
V	0	0	0	101	205	69	62	0	65	37	54
$											

TABLE H.100

$DM	8	29	84	10	30	0	433	560	686		
ALTITUDE		ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	80	0	0	0	0	0	0			
I	300	27	19						0	0	0
V	280	23	8	444	277	-9999	-7	48	106	43	56
V	260	26	7	482	285	22	-30	55	78	62	48
V	240	26	28	-9999	-9999	-9999	-13	69	91	43	55
V	220	31	8	334	287	26	-9	65	130	41	69
V	200	32	28	260	266	39	-23	56	49	41	65
V	180	32	30	270	296	30	-32	53	47	80	56
V	160	35	52	138	293	71	-41	49	42	40	53
V	140	41	43	87	292	102	-25	45	51	42	49
V	120	37	67	93	184	65	-30	51	74	44	45
V	100	50	28	111	178	58	-18	59	44	46	51
V	80	63	32	84	191	71	-21	57	49	45	59
V	60	102	27	129	197	57	-13	55	68	49	57
V	40	150	26	111	188	46	-27	46	59	50	55
V	0	0	0	113	182	69	62	0	46	32	46
$											

TABLE H.97

$DM 8 29 84 9 44 59 373 534 607

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	20	33						0	0	0
I	280	22	27						163	44	43
I	260	21	28						999	999	50
I	240	19	28						97	45	55
I	220	21	31						207	72	50
I	200	23	20						162	44	47
V	180	26	22	433	235	23	20	41	155	57	47
V	160	28	32	371	235	15	13	51	89	39	41
V	140	33	30	357	239	15	15	54	42	34	51
V	120	37	51	363	237	26	10	57	41	37	54
V	100	50	16	301	223	22	14	51	70	38	57
V	80	56	40	228	230	24	0	56	51	40	51
V	60	69	16	251	225	27	12	45	47	43	56
V	40	98	32	194	214	30	18	48	46	43	45
V	0	0	0	116	191	68	61	0	47	37	48
$											

TABLE H.98

$DM 8 29 84 10 0 1 410 518 675

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	21	28						0	0	0
I	280	21	36						999	999	49
V	260	24	6	462	228	-9999	2	44	999	999	46
V	240	22	14	-9999	-9999	-9999	0	48	38	84	44
V	220	23	27	337	233	-9999	6	54	999	999	48
V	200	25	29	-9999	-9999	-9999	9	59	43	61	54
V	180	29	3	324	233	15	9	58	105	41	59
V	160	29	30	325	226	30	7	42	59	41	58
V	140	34	28	335	226	39	4	45	57	45	42
V	120	43	35	278	220	29	12	49	51	50	45
V	100	51	25	267	206	21	1	57	48	36	49
V	80	59	19	242	197	34	8	57	46	41	57
V	60	68	35	129	196	56	-8	61	78	45	57
V	40	91	57	158	198	34	-3	47	62	49	61
V	0	0	0	98	188	68	61	0	45	42	47
$											

TABLE H.95

#DM	8	29	84	9	15	0	290	358	286		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	20	-9999	326	222	-9999	-5	-9999	0	0	0
V	280	16	-9999	361	215	39	-15	-9999	32	42	36
V	260	18	20	-9999	-9999	-9999	15	67	48	41	49
V	240	15	-9999	-9999	-9999	-9999	11	-9999	98	35	67
V	220	15	22	-9999	-9999	-9999	-36	43	66	103	50
V	200	14	21	-9999	-9999	-9999	-27	38	109	31	43
V	180	18	73	227	192	34	-31	63	132	33	38
V	160	14	3	250	196	26	-31	45	34	40	63
V	140	14	15	228	208	25	-39	37	41	37	45
V	120	16	9	210	193	27	-35	39	67	40	37
V	100	18	20	197	199	39	-38	48	50	40	39
V	80	25	50	225	207	34	-41	34	53	45	48
V	60	45	45	-9999	-9999	-9999	-27	36	49	38	34
V	40	58	24	162	185	-9999	-35	32	92	43	36
V	0	0	0	114	202	67	60	0	48	32	32
$											

TABLE H.96

[illegible]	8	29	84	9	29	59	456	529	524		
	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	23	23						0	0	0
V	280	24	-9999	221	212	-9999	-43	-9999	36	102	58
V	260	21	17	196	188	55	-29	38	44	43	48
V	240	20	22	237	170	15	-30	45	38	38	38
V	220	20	22	224	183	22	-38	44	33	27	45
V	200	19	34	206	201	38	-25	45	30	35	44
V	180	19	38	240	215	38	-34	48	71	43	45
V	160	20	31	224	215	38	-26	47	44	44	48
V	140	22	30	273	210	32	-22	46	40	38	47
V	120	23	48	222	212	30	-24	52	47	35	46
V	100	24	53	211	187	39	-25	46	45	38	52
V	80	35	25	269	196	18	-17	48	41	44	46
V	60	47	3	321	200	34	-3	57	38	37	48
V	40	57	21	220	207	31	0	48	45	46	57
V	0	0	0	73	205	67	60	0	46	45	48
$											

TABLE H.93

#DM 8 29 84 8 45 0 416 471 419

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	26	-9999						999	999	999
V	260	15	-9999	393	217	-9999	19	-9999	999	999	78
V	240	13	-9999	-9999	-9999	-9999	-36	-9999	40	81	45
V	220	13	-9999	399	227	22	-20	-9999	108	63	46
V	200	14	24	412	243	11	-15	41	35	76	47
V	180	14	52	374	234	23	-2	42	68	87	41
V	160	15	17	327	228	16	-11	44	56	59	42
V	140	15	17	281	222	13	-4	36	65	45	44
V	120	18	31	287	222	11	-9	41	37	44	36
V	100	26	60	279	213	26	-7	50	36	55	41
V	80	34	66	325	196	22	-8	46	41	61	50
V	60	51	20	140	192	44	-7	35	46	88	46
V	40	53	32	166	171	39	-27	44	44	42	35
V	0	0	0	89	186	66	60	0	43	27	44
$											

TABLE H.94

#DM 8 29 84 8 59 59 454 624 502

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	100	0	0	0	0	0	0			
I	300	18	-9999						0	0	0
V	280	17	-9999	477	247	-9999	7	-9999	999	999	29
V	260	17	4	398	232	17	42	48	44	41	40
V	240	16	26	428	252	16	20	37	43	42	48
V	220	15	28	350	225	11	18	34	80	27	37
V	200	14	13	335	236	18	1	40	39	32	34
V	180	14	27	287	232	10	0	45	67	36	40
V	160	14	15	263	231	22	-17	39	29	33	45
V	140	19	32	221	221	19	-15	42	39	36	39
V	120	19	42	236	213	24	-22	45	35	36	42
V	100	29	57	244	201	34	-20	45	40	38	45
V	80	41	29	193	192	30	-15	31	42	40	45
V	60	59	20	194	186	26	-14	45	47	41	31
V	40	80	20	188	194	37	-6	51	40	33	45
V	0	0	0	97	191	67	60	0	45	40	51
$											

TABLE H.91

#DM 8 29 84 8 14 58 264 344 308

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	13	-9999						999	999	999
V	240	15	6	427	233	-9999	0	28	999	999	16
V	220	18	30	412	227	7	-15	34	32	30	28
V	200	15	21	380	220	10	-18	35	24	32	34
V	180	15	23	358	224	10	-19	35	41	28	35
V	160	14	35	314	212	16	-14	38	34	33	35
V	140	14	24	284	210	10	-14	35	31	30	38
V	120	15	33	271	208	28	-17	40	65	25	35
V	100	16	12	-9999	-9999	-9999	-20	51	77	30	40
V	80	21	19	231	210	38	-12	41	81	24	51
V	60	29	15	186	191	33	-22	38	74	38	41
V	40	45	13	225	165	-9999	-13	33	46	45	38
V	0	0	0	49	193	66	60	0	33	22	33

$

TABLE H.92

#DM 8 29 84 8 30 0 353 511 412

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	18	-9999						999	999	999
I	260	14	-9999						999	999	35
I	240	14	21						130	68	30
V	220	14	20	407	227	8	-15	35	102	34	42
V	200	13	24	352	221	14	-9	45	35	35	35
V	180	13	10	333	227	12	-8	46	38	41	45
V	160	12	37	295	212	25	-16	48	41	54	46
V	140	12	17	261	227	25	-22	44	49	35	48
V	120	14	56	251	215	27	-30	42	42	37	44
V	100	16	34	205	223	44	-32	48	47	32	42
V	80	23	70	214	207	24	-28	52	81	37	48
V	60	36	24	142	201	48	-11	49	40	39	52
V	40	49	9	155	175	39	-16	46	46	36	49
V	0	0	0	93	192	66	60	0	45	42	46

$

TABLE H.89

$DM 8 29 84 7 45 0 461 593 512

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
I	260	17	18						999	999	999
V	240	17	23	563	227	4	-16	28	91	31	28
V	220	18	30	533	220	6	-7	30	36	40	28
V	200	19	39	504	218	10	-13	29	30	36	30
V	180	21	20	499	215	6	-13	32	31	36	29
V	160	24	30	407	206	9	-14	28	31	60	32
V	140	22	21	369	205	9	-18	31	30	45	28
V	120	21	7	318	202	20	-15	34	30	27	31
V	100	18	2	281	183	20	-21	35	38	36	34
V	80	18	13	279	184	24	-30	40	35	33	35
V	60	14	-9999	284	168	35	-22	-9999	38	31	40
V	40	15	-9999	280	161	24	-56	-9999	52	37	43
V	0	0	0	78	179	65	59	0	37	42	11
$											

TABLE H.90

$DM 8 29 84 8 0 0 476 577 496

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999						0	0	0
I	280	-9999	-9999						999	999	999
V	260	16	20	523	233	-9999	-17	31	999	999	999
V	240	18	12	475	223	7	-6	27	32	35	31
V	220	20	30	440	218	7	-10	28	29	31	27
V	200	19	21	356	209	13	-15	28	26	32	28
V	180	20	13	342	208	10	-18	31	34	32	28
V	160	18	30	301	201	15	-15	34	32	31	31
V	140	16	25	279	195	17	-12	33	36	26	34
V	120	13	24	247	190	15	-14	34	37	23	33
V	100	13	36	276	181	20	-12	38	36	31	34
V	80	16	21	234	179	23	-5	40	39	32	38
V	60	16	-9999	227	189	-9999	13	-9999	52	36	40
V	40	24	-9999	187	181	-9999	8	-9999	63	38	38
V	0	0	0	56	170	66	59	0	46	32	24
$											

TABLE H.87

#DM 8 28 84 15 0 1 375 383 631

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	32	18								
									0	0	0
V	280	32	25	429	213	16	84	72	72	93	63
V	260	34	40	-9999	-9999	-9999	68	92	85	60	72
V	240	35	44	-9999	-9999	-9999	94	64	999	999	92
V	220	41	28	-9999	-9999	-9999	88	68	125	68	64
V	200	45	29	477	191	20	68	69	150	69	68
V	180	48	44	276	171	35	57	63	73	86	69
V	160	51	59	591	177	19	49	66	95	41	63
V	140	51	34	524	160	12	39	76	54	73	66
V	120	54	32	548	154	-9999	14	62	46	51	76
V	100	57	32	589	160	13	14	63	49	49	62
V	80	75	37	638	156	17	0	55	43	44	63
V	60	98	40	628	154	8	-19	59	44	54	55
V	40	141	25	460	161	-9999	-3	62	51	43	59
V	0	0	0	278	132	79	65	0	75	41	62
$											

TABLE H.88

#DM 8 29 84 7 30 0 512 622 565

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	-9999	-9999								
									0	0	0
V	280	15	-9999	688	226	-9999	-7	-9999	999	999	999
V	260	18	6	706	233	7	-12	31	24	38	46
V	240	17	22	630	227	7	-10	37	29	37	31
V	220	18	33	631	227	7	-11	49	35	43	37
V	200	19	12	567	227	7	-14	38	34	40	49
V	180	23	16	540	219	12	-7	38	35	34	38
V	160	24	25	480	214	12	-14	36	35	34	38
V	140	26	34	425	208	9	-18	32	39	37	36
V	120	25	15	357	203	15	-19	33	33	32	32
V	100	25	19	311	187	19	-21	41	35	38	33
V	80	25	27	278	188	20	-27	33	35	30	41
V	60	25	35	284	166	16	-45	45	37	35	33
V	40	28	17	268	169	19	-36	36	43	30	45
V	0	0	0	87	176	65	59	0	39	37	36
$											

TABLE H.85

#DM 8 28 84 14 15 1 421 515 535

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	28	29						0	0	0
I	280	35	38						81	114	98
I	260	37	47						48	136	80
I	240	41	37						67	123	69
I	220	40	25						999	999	99
I	200	41	9						122	89	96
I	180	45	54						116	85	81
V	160	45	48	385	186	42	7	81	108	55	87
V	140	52	54	-9999	-9999	-9999	-11	77	104	72	81
V	120	65	43	418	195	28	-14	73	121	55	77
V	100	70	51	365	206	21	-21	77	73	46	73
V	80	81	50	352	204	28	2	70	55	53	77
V	60	106	42	400	161	29	-23	74	50	47	70
V	40	169	39	240	206	-9999	-5	65	82	78	74
V	0	0	0	192	166	78	66	0	49	38	65
$											

TABLE H.86

#DM 8 28 84 14 45 0 301 480 471

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	34	50						0	0	0
V	280	34	16	993	234	8	119	77	110	55	62
V	260	39	41	1022	235	4	153	78	55	77	77
V	240	35	23	987	229	-9999	151	51	47	64	78
V	220	43	44	958	232	11	143	67	40	57	51
V	200	55	35	863	226	9	129	66	43	51	67
V	180	50	29	766	226	10	110	68	47	57	66
V	160	57	35	772	226	15	89	70	50	61	68
V	140	89	16	647	225	18	88	68	75	69	70
V	120	97	25	595	222	18	96	69	77	65	68
V	100	101	15	642	227	13	63	80	80	57	69
V	80	117	32	-9999	-9999	-9999	76	67	72	54	80
V	60	127	34	-9999	-9999	-9999	16	69	999	999	67
V	40	165	6	335	208	-9999	49	72	92	49	69
V	0	0	0	203	146	79	67	0	44	44	72
$											

TABLE H.83

#DM 8 28 84 13 59 59 463 530 695

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	24	32	236	184	35	13	80	0	0	0
V	280	27	43	242	219	-9999	8	87	46	81	80
V	260	26	38	324	168	32	-17	88	51	52	87
V	240	31	82	407	148	30	-12	92	88	61	88
V	220	42	54	-9999	-9999	-9999	27	99	49	68	92
V	200	46	41	-9999	-9999	-9999	43	101	999	999	99
V	180	51	38	-9999	-9999	-9999	64	83	67	113	101
V	160	54	64	561	147	23	27	78	999	999	83
V	140	60	34	443	167	44	10	89	63	70	78
V	120	64	38	533	171	33	10	73	95	80	89
V	100	76	41	361	176	36	15	79	71	96	73
V	80	90	37	472	185	18	28	66	96	69	79
V	60	122	50	390	177	24	22	63	73	49	66
V	40	143	49	324	142	-9999	16	62	57	56	63
V	0	0	0	186	144	78	66	0	66	48	62
$											

TABLE H.84

#DM 8 28 84 14 29 59 427 471 583

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
V	300	28	40	600	215	10	74	65	0	0	0
V	280	33	40	580	221	16	67	59	45	47	65
V	260	31	42	599	209	15	64	68	76	56	59
V	240	29	43	496	207	16	43	59	85	52	68
V	220	35	37	420	203	17	46	70	68	44	59
V	200	41	49	389	202	28	45	73	44	39	70
V	180	46	43	440	185	20	43	78	53	46	73
V	160	49	49	425	208	22	21	70	59	49	78
V	140	61	56	481	212	19	23	74	49	49	70
V	120	69	53	498	209	12	17	78	50	48	74
V	100	80	17	489	194	31	31	65	49	42	78
V	80	102	26	510	223	26	26	66	68	68	65
V	60	142	28	329	216	48	58	62	95	60	66
V	40	157	39	300	202	29	32	63	79	66	62
V	0	0	0	160	152	78	66	0	70	39	63
$											

TABLE H.81

#DM 8 28 84 13 30 1 313 367 481

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	28	54						0	0	0
I	280	22	39						999	999	73
I	260	28	62						43	141	49
I	240	32	66						120	118	84
I	220	33	30						999	999	95
V	200	42	73	476	147	-9999	-3	96	999	999	72
V	180	39	41	-9999	-9999	-9999	16	84	42	52	96
V	160	47	62	301	207	38	8	71	999	999	84
V	140	56	37	226	199	53	9	72	59	49	71
V	120	76	34	333	196	30	30	69	78	47	72
V	100	91	46	189	224	-9999	7	78	60	62	69
V	80	130	35	277	192	-9999	31	72	41	47	78
V	60	146	54	298	231	35	22	72	47	55	72
V	40	151	7	244	195	30	21	69	89	59	72
V	0	0	0	111	160	77	66	0	39	35	69
$											

TABLE H.82

#DM 8 28 84 13 44 59 421 480 450

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	29	54						0	0	0
V	280	30	14	737	241	-9999	110	73	105	82	80
V	260	34	36	743	249	-9999	77	89	45	86	73
V	240	37	37	795	256	6	99	69	56	73	89
V	220	37	50	765	245	-9999	72	87	71	68	69
V	200	39	45	549	244	8	54	91	32	70	87
V	180	50	66	-9999	-9999	-9999	128	71	52	64	91
V	160	58	13	-9999	-9999	-9999	129	65	999	999	71
V	140	63	37	454	203	32	99	80	126	58	65
V	120	68	22	-9999	-9999	-9999	108	80	87	51	80
V	100	88	21	-9999	-9999	-9999	69	83	118	49	80
V	80	124	29	-9999	-9999	-9999	60	80	110	47	83
V	60	120	36	355	160	31	-13	70	999	999	80
V	40	142	34	208	180	43	-17	63	47	67	70
V	0	0	0	177	162	77	66	0	58	43	63
$											

TABLE H.79

#DM 8 28 84 12 59 56 342 454 572

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	38	50						0	0	0
I	280	35	78						75	111	63
I	260	30	53						39	125	66
V	240	37	50	470	176	28	-3	69	56	113	79
V	220	48	48	425	198	31	-16	69	56	66	69
V	200	51	43	531	168	18	-8	72	89	50	69
V	180	54	43	474	167	11	18	70	38	73	72
V	160	64	37	499	157	15	33	73	48	53	70
V	140	73	42	426	144	14	20	69	44	53	73
V	120	98	43	468	154	12	18	69	46	40	69
V	100	95	48	456	145	17	1	66	46	55	69
V	80	92	39	431	142	23	-7	59	51	50	66
V	60	117	24	420	142	17	-30	57	45	48	59
V	40	163	42	429	149	-9999	-3	55	51	48	57
V	0	0	0	193	142	76	66	0	48	38	55

$

TABLE H.80

#DM 8 28 84 13 14 58 329 349 464

	ALTITUDE	ECHO	S ECHO	SPEED	TETA	S TETA	W	S W	SG1	SG2	SG3
S	** INV **	0	0	0	0	0	0	0			
I	300	19	-9999						0	0	0
I	280	16	-9999						136	42	60
V	260	21	35	350	126	24	-34	68	999	999	69
V	240	17	11	-9999	-9999	-9999	-46	56	37	50	68
V	220	18	22	423	114	-9999	-72	63	118	62	56
V	200	19	31	-9999	-9999	-9999	-60	58	52	44	63
V	180	20	46	-9999	-9999	-9999	-39	66	144	66	58
V	160	19	35	-9999	-9999	-9999	-57	55	999	999	66
V	140	22	31	415	126	23	-25	61	119	59	55
V	120	27	47	406	144	31	-53	70	55	52	61
V	100	36	55	439	148	23	-51	55	89	57	70
V	80	46	15	350	147	32	-48	49	78	44	55
V	60	61	11	404	149	12	-34	53	88	49	49
V	40	100	37	305	150	17	-23	52	44	51	53
V	0	0	0	171	152	75	65	0	49	34	52

$

APPENDIX I

10-Meter Tower Meteorological Data

The 10-meter tower meteorological data shows the surface weather conditions during the three test days. The data scaled from graphic level recorder traces is organized by date and time. Within each table, the following data are provided:

Time (EDT)	Expressed in Eastern Daylight Time.
Temperature	Expressed in degrees Fahrenheit.
Humidity	Expressed as a percent.
Windspeed	Expressed in MPH.
Wind Direction	Direction from which the wind is blowing.

Accuracy figures for equipment used are contained in Section 4.3.2. The reader may also want to refer to Figures 19 and 20 for pictures of the 10-meter tower.

TABLE I.1.1

SURFACE METEOROLOGICAL DATA

TEST DATE: August 27, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
7:00	56	1.5	285	45
7:05	56	1.0	270	50
7:10	57	0.5	275	48
7:15	57	0	275	48
7:20	58	0	275	43
7:25	58	0	275	48
7:30	58	0.5	330	48
7:35	58	0.5	320	50
7:40	58	2.0	300	57
7:45	58	2.0	300	57
7:50	58	2.0	300	57
7:55	59	2.0	290	52
8:00	59	2.0	280	52
8:05	59	2.5	290	52
8:10	60	2.0	280	50
8:15	61	1.5	290	50
8:20	62	1.5	310	50
8:25	63	1.0	315	51
8:30	64	1.0	360	56
8:35	64	1.0	360	60
8:40	65	1.0	60	61
8:45	65	1.0	60	65

TABLE I.1.2

SURFACE METEOROLOGICAL DATA

TEST DATE: August 27, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
8:50	66	1.0	70	62
8:55	68	1.0	270	60
9:00	68	2.0	290	62
9:05	68	1.5	230	62
9:10	68	2.0	220	62
9:15	68	3.0	230	49
9:20	68	3.0	230	49
9:25	68	3.5	230	49
9:30	68	3.5	200	49
9:35	69	4.0	240	43
9:40	70	3.0	200	41
9:45	71	3.0	170	39
9:50	72	2.0	140	42
9:55	72	3.0	180	42
10:00	71	4.0	190	45
10:05	74	2.0	180	38
10:10	72	3.5	210	42
10:15	72	3.0	180	42
10:20	72	3.0	140	42
10:25	74	3.0	190	38
10:30	73	3.5	180	39
10:35	74	2.0	170	38

TABLE I.1.3

SURFACE METEOROLOGICAL DATA

TEST DATE: August 27, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
10:40	74	4.0	220	40
10:45	75	1.0	330	41
10:50	76	2.0	210	37
10:55	76	3.0	230	37
11:00	77	1.5	220	37
11:05	76	4.0	220	40
11:10	76	5.0	230	40
11:15	76	4.5	250	40
11:20	76	4.0	260	40
11:25	77	3.0	230	37
11:30	77	5.0	165	37
11:35	78	2.0	140	38
11:40	78	3.0	130	40
11:45	78	5.0	160	38
11:50	78	4.0	140	38
11:55	78	6.5	160	34
12:00	79	3.0	160	34
12:05	79	3.0	190	38
12:10	79	4.0	200	38
12:15	78	4.5	220	40
12:20	80	3.5	180	37
12:25	80	4.0	180	37

TABLE I.1.4

SURFACE METEOROLOGICAL DATA

TEST DATE: August 27, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
12:30	79	4.5	250	34
12:35	80	3.5	200	35
12:40	80	5.0	210	35
12:45	80	5.0	230	35
12:50	80	4.0	200	35
12:55	80	3.0	210	35
1:00	81	2.0	210	37
1:05	80	6.0	170	32
1:10	80	5.0	210	35
1:15	80	3.5	240	35
1:20	81	2.0	200	31
1:25	80	6.5	170	35
1:30	81	5.0	160	33
1:35	81	5.0	160	33
1:40	81	7.0	160	30
1:45	81	5.0	190	30
1:50	82	5.0	190	31
1:55	82	5.0	210	31
2:00	82	3.0	230	35
2:05	82	4.5	220	38
2:10	82	4.5	220	35
2:15	82	5.0	180	31

TABLE I.1.5

SURFACE METEOROLOGICAL DATA

TEST DATE: August 27, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
2:20	80	5.0	220	35
2:25	80	4.5	230	35
2:30	82	9.0	140	29
2:35	82	5.0	200	30
2:40	84	5.0	165	45
2:45	84	3.5	125	45
2:50	82	3.0	140	40
2:55	82	5.0	135	40
3:00	84	4.0	110	38
3:05	84	5.0	130	38
3:10	84	5.0	120	38
3:15	84	4.0	180	38
3:20	84	4.0	190	38
3:25	84	3.0	115	38
3:30	83	5.0	130	40
3:35	86	4.0	130	34
3:40	83	3.0	150	39
3:45	82	3.5	150	40
3:50	85	3.0	140	32
3:55	84	4.0	135	38
4:00	84	5.0	150	33
4:05	84	5.0	160	33

TABLE I.2.1

SURFACE METEOROLOGICAL DATA

TEST DATE: August 28, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
7:00	66	4.5	145	61
7:05	66	4.5	150	67
7:10	66	3.0	150	67
7:15	66	3.0	140	61
7:20	66	3.5	130	67
7:25	66	3.0	120	67
7:30	66	2.5	130	70
7:35	67	3.0	140	69
7:40	67	2.5	150	69
7:45	68	4.0	170	64
7:50	68	4.5	175	60
7:55	68	4.5	170	60
8:00	68	3.0	165	68
8:05	68	2.5	170	64
8:10	68	3.0	180	64
8:15	68	4.0	190	68
8:20	68	4.0	180	64
8:25	69	4.0	170	64
8:30	69	5.0	180	64
8:35	69	4.0	180	64
8:40	69	4.0	180	64
8:45	70	4.5	175	60

TABLE I.2.2

SURFACE METEOROLOGICAL DATA

TEST DATE: August 28, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
8:50	70	5.0	190	60
8:55	70	4.5	210	60
9:00	70	6.0	180	64
9:05	70	4.0	210	64
9:10	70	5.0	200	64
9:15	70	6.0	190	64
9:20	71	4.5	220	60
9:25	72	5.0	190	58
9:30	72	5.5	190	61
9:35	72	5.0	200	61
9:40	72	4.5	210	61
9:45	72	4.5	225	66
9:50	72	6.0	220	66
9:55	73	5.0	240	62
10:00	74	5.0	200	59
10:05	74	5.0	200	59
10:10	74	5.0	190	59
10:15	74	5.0	180	59
10:20	74	4.5	170	61
10:25	75	4.0	230	55
10:30	75	3.0	190	55
10:35	76	4.0	180	56

TABLE I.2.3

SURFACE METEOROLOGICAL DATA

TEST DATE: August 28, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
10:40	76	3.5	190	56
10:45	76	3.0	180	59
10:50	77	3.5	210	56
10:55	76	3.5	200	59
11:00	77	5.0	230	56
11:05	77	4.0	210	56
11:10	77	6.0	200	60
11:15	77	5.0	190	60
11:20	78	6.0	150	56
11:25	78	6.0	160	56
11:30	78	5.0	200	56
11:35	79	4.0	165	50
11:40	80	3.0	140	51
11:45	79	5.0	180	58
11:50	80	3.0	180	55
11:55	80	4.0	160	55
12:00	80	6.0	170	55
12:05	80	2.0	160	51
12:10	80	5.0	160	55
12:15	80	5.0	180	55
12:20	80	4.5	220	55
12:25	80	4.0	230	55

TABLE I.2.4

SURFACE METEOROLOGICAL DATA

TEST DATE: August 28, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
12:30	80	5.0	165	55
12:35	81	4.0	150	52
12:40	81	5.0	190	52
12:45	82	8.5	190	49
12:50	82	6.0	150	51
12:55	82	5.0	160	51
1:00	81	7.0	170	52
1:05	81	6.0	170	52
1:10	81	6.0	180	52
1:15	81	4.5	175	52
1:20	82	4.0	180	49
1:25	82	4.0	190	49
1:30	83	5.0	200	47
1:35	82	6.0	180	51
1:40	83	6.0	170	50
1:45	83	7.0	140	47
1:50	84	6.5	160	48
1:55	82	6.0	180	51
2:00	84	7.0	170	48
2:05	83	6.0	190	47
2:10	83	7.0	170	47
2:15	84	6.0	150	48

TABLE I.2.5

SURFACE METEOROLOGICAL DATA

TEST DATE: August 28, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
2:20	84	5.5	190	48
2:25	84	5.0	180	48
2:30	84	5.0	200	48
2:35	85	6.0	140	48
2:40	85	7.0	170	48
2:45	84	11.0	140	48
2:50	84	8.0	160	45
2:55	84	7.0	170	48
3:00	85	7.0	155	48
3:05	84	10.0	150	45
3:10	84	9.0	160	42
3:15	86	4.0	140	38
3:20	86	5.0	130	45
3:25	86	5.0	130	48
3:30	86	5.0	135	45
3:35	86	5.0	140	48
3:40	86	4.0	140	45
3:45	86	5.0	120	45
3:50	85	6.5	110	48
3:55	85	6.0	110	48
4:00	84	5.0	110	50
4:05	85	5.0	120	48

TABLE I.3.1

SURFACE METEOROLOGICAL DATA

TEST DATE: August 29, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
7:00	70	4.0	200	63
7:05	70	5.5	190	63
7:10	70	4.0	180	63
7:15	70	3.5	180	63
7:20	70	3.5	190	63
7:25	70	4.0	200	63
7:30	70	3.5	180	63
7:35	70	3.5	190	63
7:40	70	4.0	190	63
7:45	71	3.5	190	61
7:50	71	2.5	190	61
7:55	71	3.5	200	61
8:00	71	4.0	200	61
8:05	72	2.5	210	59
8:10	72	3.0	210	59
8:15	72	4.5	215	61
8:20	72	3.0	210	58
8:25	72	4.0	200	61
8:30	72	4.0	210	58
8:35	72	4.0	220	61
8:40	72	3.5	220	61
8:45	72	3.0	230	58

TABLE I.3.2

SURFACE METEOROLOGICAL DATA

TEST DATE: August 29, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
8:50	72	5.0	220	64
8:55	72	4.5	210	58
9:00	72	5.0	210	58
9:05	72	4.0	210	58
9:10	72	4.0	220	61
9:15	72	4.0	230	58
9:20	72	4.0	240	61
9:25	72	3.0	250	58
9:30	73	4.0	220	61
9:35	73	6.0	210	61
9:40	73	4.0	210	61
9:45	73	4.0	215	61
9:50	73	4.0	210	61
9:55	74	5.0	180	59
10:00	74	4.0	220	59
10:05	74	4.0	240	59
10:10	74	3.5	250	62
10:15	74	6.0	250	62
10:20	74	4.5	220	59
10:25	75	3.0	180	55
10:30	74	4.5	210	55
10:35	75	4.0	180	59

TABLE I.3.3

SURFACE METEOROLOGICAL DATA

TEST DATE: August 29, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
10:40	76	4.0	165	58
10:45	76	4.0	180	52
10:50	76	4.5	165	88
10:55	76	5.0	180	58
11:00	75	6.5	190	59
11:05	75	6.0	180	62
11:10	76	4.0	180	58
11:15	76	5.0	180	58
11:20	76	5.0	180	58
11:25	76	5.0	190	58
11:30	76	4.0	180	58
11:35	76	4.5	190	58
11:40	76	6.0	170	58
11:45	76	5.0	180	58
11:50	77	5.0	180	58
11:55	77	5.0	190	58
12:00	77	7.0	200	58
12:05	77	7.0	170	58
12:10	77	6.0	200	58
12:15	77	5.0	205	58
12:20	78	5.0	190	54
12:25	79	5.5	200	50

TABLE J.45

DATE : 8-27-84

OPERATION : LFO 1.0 Vh 130 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
H17	9:35	90	125	0	500
H17	9:35	100	125	0	590
H17	9:35	99	125	0	500
H17	9:35	100	128	0	510
H17	9:35	98	130	0	515
H17	9:35	97	128	0	530
H17	9:36	99	129	0	540
H17	9:36	99	128	0	540
H17	9:36	99	128	0	550
H17	9:36	99	129	0	580

TABLE J.46

DATE : 8-27-84

OPERATION : LFO 1.0 Vh 130 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
H18	9:39	100	130	0	485
H18	9:39	100	130	0	470
H18	9:39	100	132	0	470
H18	9:39	99	130	0	480
H18	9:39	100	130	0	480
H18	9:39	100	130	0	480
H18	9:39	100	130	0	490
H18	9:39	99	128	0	500

TABLE J.47

DATE : 8-27-84

OPERATION : LFO 1.0 Vh 130 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
H19	9:42	100	130	0	460
H19	9:42	98	128	0	500
H19	9:42	98	130	0	490
H19	9:42	99	129	0	500
H19	9:42	98	128	0	520
H19	9:42	98	129	0	520
H19	9:42	99	130	0	500
H19	9:42	98	130	0	500
H19	9:42	99	129	-500	490

TABLE J.48

DATE : 8-27-84

OPERATION : LFO 1.0 Vh 130 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
H20	9:46	95	130	-500	460
H20	9:46	97	130	0	490
H20	9:46	98	128	0	488
H20	9:46	98	130	0	490
H20	9:46	99	130	0	500
H20	9:46	99	130	0	505
H20	9:46	99	128	0	510
H20	9:46	98	NA	500	530

TABLE J.41

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G13	9:22	87	117	0	970
G13	9:22	88	118	0	980
G13	9:22	86	117	0	1000
G13	9:22	86	119	0	980
G13	9:22	84	118	0	970
G13	9:22	85	117	0	995
G13	9:22	85	116	0	1000
G13	9:22	85	115	0	1000
G13	9:22	85	118	0	1000
G13	9:22	85	118	0	990
G13	9:22	87	118	0	980
G13	9:22	85	118	0	975

TABLE J.42

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G14	9:25	88	119	0	980
G14	9:25	88	119	0	940
G14	9:25	87	120	0	950
G14	9:25	88	120	0	1000
G14	9:25	87	118	0	1010
G14	9:25	88	119	0	1005
G14	9:25	85	118	0	995
G14	9:26	85	117	0	1010
G14	9:26	86	119	0	1020

TABLE J.43

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G15	9:27	88	119	0	995
G15	9:27	88	118	0	1000
G15	9:27	83	118	0	990
G15	9:27	83	117	0	990
G15	9:27	83	117	0	990
G15	9:27	84	117	0	975
G15	9:27	83	118	0	980
G15	9:27	82	117	0	995

TABLE J.44

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G16	9:30	88	120	0	1000
G16	9:30	88	119	0	1000
G16	9:30	88	120	0	1005
G16	9:31	87	119	0	1015
G16	9:31	88	119	0	1020

TABLE J.37

DATE : 8-28-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C239	12:15	58	57	0	690
C239	12:15	40	57	0	680
C239	12:15	30	60	-500	600
C239	12:15	30	57	-600	510
C239	12:15	30	57	-700	440
C239	*12:15	40	54	-600	380
C239	12:15	36	57	-500	290
C239	12:16	30	62	-500	230
C239	12:16	30	61	-800	160
C239	12:16	30	57	-700	100

TABLE J.38

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G9	9:12	90	118	-500	990
G9	9:12	88	118	0	990
G9	9:12	88	117	500	995
G9	9:12	89	119	0	990
G9	9:13	88	119	0	990
G9	9:13	87	118	0	985
G9	9:13	80	117	-600	975

TABLE J.39

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G10	9:15	87	120	0	980
G10	9:15	83	120	0	960
G10	9:15	87	118	500	1000
G10	9:16	84	119	0	1000
G10	9:16	86	120	0	960
G10	9:16	85	118	0	965

TABLE J.40

DATE : 8-27-84

OPERATION : LFO 0.9 Vh 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
G11	NA	NA	NA	NA	NA

G12	9:20	88	118	0	950
G12	9:20	88	117	0	980
G12	9:20	88	118	0	1020
G12	9:20	83	119	-500	980
G12	9:20	85	118	0	970
G12	9:20	85	117	0	980
G12	9:21	83	115	0	1000
G12	9:21	83	115	0	1020

TABLE J.33

DATE : 8-28-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CZ32	11:49	75	58	500	110
CZ32	11:49	99	60	1000	220
CZ32	11:49	99	59	1100	330
CZ32	11:49	98	60	1100	470
CZ32	11:50	99	59	1000	590
CZ32	11:50	100	60	1000	700
CZ32	11:50	100	59	1100	860
CZ32	11:50	99	60	1100	1000
CZ32	11:50	98	60	1200	1170
CZ32	11:50	99	58	1100	1300

TABLE J.34

DATE : 8-28-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CZ33	11:53	40	60	0	700
CZ33	11:53	40	58	-500	670
CZ33	11:53	38	59	-700	590
CZ33	11:53	30	58	-700	500
CZ33	11:54	30	57	-800	430
CZ33	*11:54	30	58	-800	340
CZ33	11:54	20	60	-700	250
CZ33	11:54	20	58	-700	230
CZ33	11:54	30	58	-600	140

TABLE J.35

DATE : 8-28-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CZ35	12:00	50	60	0	700
CZ35	12:00	30	60	-500	680
CZ35	12:00	30	60	-500	600
CZ35	12:01	30	57	-600	540
CZ35	12:01	30	57	-600	480
CZ35	12:01	30	57	-600	400
CZ35	*12:01	30	57	-700	320
CZ35	12:01	45	58	-600	250
CZ35	12:01	35	58	-600	220
CZ35	12:01	30	60	-600	130

TABLE J.36

DATE : 8-28-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CZ37	12:08	30	59	-700	580
CZ37	12:09	35	56	-600	510
CZ37	12:09	32	61	-600	460
CZ37	12:09	30	60	-700	400
CZ37	12:09	30	58	-1000	290
CZ37	12:09	30	56	-700	240
CZ37	12:09	30	57	-700	160
CZ37	12:09	30	60	-600	110

TABLE J.29

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CS2	12:47	95	56	1100	370
CS2	*12:47	100	58	1100	600
CS2	12:47	100	59	1100	900
CS2	12:47	99	58	1400	1180
CS2	12:47	99	59	1100	1410

TABLE J.30

DATE : 8-29-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CY2	8:16	50	57	0	670
CY2	8:16	30	57	-500	600
CY2	8:16	20	56	-700	520
CY2	8:16	20	54	-1200	440
CY2	8:16	28	57	-800	380
CY2	8:16	30	57	-700	290
CY2	8:16	40	57	-500	260
CY2	8:17	30	57	-500	230
CY2	8:17	30	58	-600	180
CY2	8:17	30	58	-600	100

TABLE J.31

DATE : 8-29-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CY4	8:27	50	58	0	650
CY4	8:27	29	57	-700	580
CY4	8:27	30	56	-1000	490
CY4	8:27	37	60	-600	400
CY4	*8:27	30	59	-500	370
CY4	8:27	30	58	-600	300
CY4	8:27	31	58	-500	250
CY4	8:27	30	56	-600	210
CY4	8:27	30	57	-700	110
CY4	8:28	30	56	-500	70

TABLE J.32

DATE : 8-29-84

OPERATION: ICAO 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
CY6	8:33	50	56	0	600
CY6	8:33	30	57	-500	520
CY6	8:33	28	57	-800	440
CY6	8:33	38	57	-600	380
CY6	8:33	38	57	-500	330
CY6	8:33	28	54	-500	270
CY6	8:34	38	57	-500	210
CY6	8:34	29	58	-600	150
CY6	8:34	31	58	-600	80

TABLE J.25

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C40	12:02	NA	60	0	680
C40	12:02	50	58	0	660
C40	12:02	50	55	0	600
C40	12:02	45	58	-500	500
C40	*12:03	40	58	-500	440
C40	12:03	30	60	-600	360
C40	12:03	25	60	-800	250
C40	12:03	30	58	-600	100

TABLE J.26

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C42	12:09	57	55	0	700
C42	12:09	30	57	-600	620
C42	12:09	20	58	-600	590
C42	12:09	40	60	-500	410
C42	*12:09	30	58	-500	330
C42	12:09	30	55	-600	240
C42	12:10	38	55	-500	130
C42	12:10	45	60	-500	50

TABLE J.27

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C44	12:15	40	54	-500	680
C44	12:15	45	56	-500	580
C44	12:15	40	58	-500	530
C44	12:15	37	54	-600	470
C44	*12:16	39	54	-600	360
C44	12:16	38	53	-500	260
C44	12:16	30	60	-600	210
C44	12:16	28	58	-600	170

TABLE J.28

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C50	12:39	30	57	-500	700
C50	12:39	30	56	-700	550
C50	12:39	33	58	-500	470
C50	*12:39	30	60	-500	340
C50	12:39	27	62	-700	230
C50	12:39	30	57	-500	100

TABLE J.21

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C32	11:26	50	58	0	680
C32	11:26	45	58	0	680
C32	11:26	40	58	-500	620
C32	11:26	35	58	-500	530
C32	11:26	30	58	-700	480
C32	*11:26	28	57	-700	360
C32	11:26	28	NA	-700	290
C32	11:26	28	NA	-600	220
C32	11:27	35	NA	-500	140
C32	11:27	30	NA	-500	70

TABLE J.22

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C34	11:32	50	58	-500	630
C34	11:33	50	58	0	540
C34	11:33	35	58	-500	520
C34	*11:33	30	58	-600	430
C34	11:33	33	60	-500	340
C34	11:33	30	60	-600	280
C34	11:33	28	58	-600	200
C34	11:33	25	50	-600	90

TABLE J.23

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C36	11:40	50	60	0	700
C36	11:40	47	58	0	680
C36	11:40	50	55	0	770
C36	11:40	45	55	-500	630
C36	11:41	30	58	-700	500
C36	*11:41	30	60	-600	430
C36	11:41	30	57	-700	320
C36	11:41	33	55	-600	215
C36	11:41	35	58	-600	120
C36	11:41	28	57	-600	60

TABLE J.24

DATE : 8-27-84

OPERATION: ICAO 6 DEGREE APPROACH, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
C38	11:55	50	58	0	700
C38	11:55	50	60	0	680
C38	11:55	50	57	0	630
C38	11:55	NA	57	-500	590
C38	11:55	30	58	-500	510
C38	*11:55	30	55	-600	380
C38	11:56	30	55	-600	280
C38	11:56	35	60	-600	200
C38	11:56	30	58	-600	80

TABLE J.17

DATE : 8-28-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT :1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BZ34	11:56	55	55	0	100
BZ34	11:56	88	57	500	150
BZ34	11:56	100	58	1000	260
BZ34	*11:57	100	57	1100	450
BZ34	11:57	99	56	1000	560
BZ34	11:57	99	60	1000	690
BZ34	11:57	100	62	1400	840
BZ34	11:57	98	61	1000	990

TABLE J.18

DATE : 8-28-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT :1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BZ36	12:04	50	60	0	100
BZ36	12:04	45	57	0	100
BZ36	12:04	90	57	1000	170
BZ36	12:04	100	60	1100	300
BZ36	12:04	100	58	1200	480
BZ36	*12:05	100	59	1100	600
BZ36	12:05	100	60	1000	710
BZ36	12:05	99	60	1000	850
BZ36	12:05	99	60	1100	1000
BZ36	12:05	99	58	1600	1240

TABLE J.19

DATE : 8-28-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT :1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BZ38	12:11	45	60	0	110
BZ38	12:11	60	60	500	120
BZ38	12:12	100	56	1000	260
BZ38	12:12	N/A	58	1000	400
BZ38	*12:12	100	59	1000	510
BZ38	12:12	100	60	1000	650
BZ38	12:12	99	57	1200	830
BZ38	12:12	99	56	1100	990
BZ38	12:12	99	57	1000	1120

TABLE J.20

DATE : 8-28-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT :1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BZ40	12:18	52	55	0	100
BZ40	12:18	60	56	0	110
BZ40	12:18	98	57	1000	250
BZ40	12:18	99	57	1100	430
BZ40	12:18	99	60	1200	600
BZ40	12:19	99	60	1300	780
BZ40	12:19	98	59	1500	990
BZ40	12:19	99	60	1100	1100
BZ40	12:19	98	60	1500	1280

TABLE J.13

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B51	12:41	55	60	0	90
B51	12:42	49	60	0	80
B51	12:42	63	55	0	100
B51	12:42	100	57	1100	320
B51	*12:42	99	57	1100	530
B51	12:42	99	60	1100	810
B51	12:42	99	60	1100	1110
B51	12:42	100	59	1100	1360

TABLE J.14

DATE : 8-29-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BY1	8:09	50	60	0	100
BY1	8:09	85	60	600	180
BY1	8:09	90	58	1000	270
BY1	8:10	93	60	1000	400
BY1	8:10	93	60	1000	520
BY1	8:10	98	63	1100	680
BY1	8:10	70	68	1200	790
BY1	8:10	53	80	-500	700

TABLE J.15

DATE : 8-29-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BY3	8:23	50	60	0	100
BY3	8:23	90	60	1000	220
BY3	*8:24	93	62	1000	380
BY3	8:24	93	60	1100	530
BY3	8:24	90	60	1100	680
BY3	8:24	95	60	N/A	N/A

TABLE J.16

DATE : 8-29-84

OPERATION: ICAO TAKEOFF 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
BY5	8:30	52	58	0	100
BY5	8:30	90	60	700	200
BY5	8:30	100	59	1100	360
BY5	*8:30	100	58	1100	520
BY5	8:30	100	60	1100	670

TABLE J.9

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B43	12:11	55	55	0	80
B43	12:11	48	60	0	80
B43	12:11	92	59	500	110
B43	12:12	98	52	1200	330
B43	*12:12	100	58	1000	550
B43	12:12	98	58	1100	800
B43	12:12	100	58	1100	1000
B43	12:12	100	59	1000	1230

TABLE J.10

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B45	12:21	50	58	0	80
B45	12:21	50	54	0	70
B45	12:21	60	55	0	100
B45	12:21	90	56	900	160
B45	*12:21	98	54	1100	430
B45	12:21	99	58	1200	670
B45	12:22	100	56	1200	980
B45	12:22	99	57	1000	1200

TABLE J.11

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B47	12:27	42	60	0	100
B47	12:27	48	57	0	NA
B47	12:28	99	57	1000	250
B47	*12:28	100	55	1000	530
B47	12:28	100	57	1000	700
B47	12:28	98	60	1800	NA
B47	12:28	99	60	1100	1310

TABLE J.12

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B49	12:33	49	60	0	100
B49	12:33	55	55	0	100
B49	12:33	54	57	0	90
B49	12:34	100	62	1000	260
B49	*12:34	100	60	1100	500
B49	12:34	100	56	1000	710
B49	12:34	98	57	1000	930
B49	12:34	100	60	1100	1150

TABLE J.5

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B35	11:36	63	65	0	60
B35	11:36	50	58	0	80
B35	11:36	45	60	0	100
B35	11:36	40	60	0	90
B35	11:36	55	53	0	90
B35	11:36	63	57	500	140
B35	*11:37	98	60	1500	400
B35	11:37	100	55	1750	600
B35	11:37	100	60	1250	780
B35	11:37	98	60	1000	940
B35	11:37	98	62	1100	1200

TABLE J.6

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B37	11:51	70	55	0	80
B37	11:51	65	60	0	100
B37	11:51	48	60	0	90
B37	11:52	50	57	0	100
B37	11:52	90	55	1000	320
B37	*11:52	100	58	1000	470
B37	11:52	100	58	1000	620
B37	11:52	100	60	1000	800
B37	11:52	98	70	1000	990

TABLE J.7

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B39	11:58	65	58	0	80
B39	11:58	60	60	0	100
B39	11:58	50	60	0	90
B39	11:59	50	NA	0	100
B39	11:59	55	NA	0	110
B39	11:59	100	58	1000	300
B39	*11:59	100	57	1500	420
B39	11:59	100	57	1500	680
B39	11:59	98	57	1250	820
B39	11:59	98	60	1000	1000

TABLE J.8

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B41	12:05	43	57	0	100
B41	12:05	55	57	0	100
B41	12:05	55	57	0	100
B41	12:05	60	57	0	100
B41	12:06	100	58	1000	250
B41	*12:06	99	57	1000	520
B41	12:06	98	55	1000	690
B41	12:06	99	54	1100	910
B41	12:06	98	60	1000	1190
B41	12:06	97	57	1000	1260

TABLE J.1

DATE : 8-27-84

OPERATION: 150 M. LFO (0.9 VH) 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
A2	8:39	80	120	0	440
A2	8:39	80	118	-500	420
A2	8:39	80	118	0	420
A2	8:39	80	118	500	480
A2	8:39	80	118	0	490
A2	8:39	80	118	0	490

TABLE J.2

DATE : 8-27-84

OPERATION: 150 M. LFO (0.9 VH) 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
A3	8:40	85	118	0	500
A3	8:40	85	118	0	500
A3	8:40	85	118	0	500
A3	8:40	85	118	0	500
A3	8:40	85	117	0	500
A3	8:40	85	115	0	510
A3	8:40	83	118	-600	510
A3	8:40	85	118	-500	500

TABLE J.3

DATE : 8-27-84

OPERATION: 150 M. LFO (0.9 VH) 117 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
A4	8:41	83	117	0	490
A4	8:41	87	119	500	510
A4	8:43	85	120	0	510
A4	8:43	NA	120	-500	490
A4	8:44	85	120	-500	470
A4	8:44	83	120	0	480
A4	8:44	85	120	0	490
A4	8:44	85	120	0	500
A4	8:44	83	118	0	490
A4	8:44	85	120	0	495
A4	8:44	85	119	-500	480
A4	8:44	83	118	0	500

TABLE J.4

DATE : 8-27-84

OPERATION: ICAO TAKEOFF, 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
B33	11:28	50	60	0	100
B33	11:28	50	65	0	100
B33	11:28	45	58	0	50
B33	11:29	52	60	0	50
B33	11:29	55	57	0	50
B33	11:29	55	60	500	100
B33	11:29	100	60	1000	300
B33	*11:29	98	60	1500	520
B33	11:29	98	60	1500	700
B33	11:29	98	65	1500	1000
B33	11:29	98	68	1500	1240

APPENDIX J

Cockpit Instrument Videotape Data

The videotape flight log is a collection of aircraft instrument flight data recorded on board the helicopter. The data were videotaped for most test events (equipment problems led to some data dropout). These results were then transcribed into this log. The log includes:

Event	The event number.
Time	Time of day.
Torque %	Main rotor torque in percent.
IAS (kts.)	Indicated air speed (IAS) in knots.
Rate of C/D (FPM)	Rate of climb and descent in feet per minute.
ALT (AGL) (FT)	Altitude above ground level (AGL) in feet.

Please note: An "*" in the Time column indicates the helicopter is passing over the Centerline Center microphone location. For the Rate of C/D column a "-" indicates the descent of the helicopter.

TABLE I.3.4

SURFACE METEOROLOGICAL DATA

TEST DATE: August 29, 1984

TIME (EDT)	TEMPERATURE °F	WINDSPEED (MPH)	WIND DIR. (DEGREES)	HUMIDITY %
12:30	80	6.0	170	48
12:35	80	5.0	180	55
12:40	79	5.5	155	58
12:45	78	6.5	190	60
12:50	79	7.0	210	58
12:55	77	6.0	210	58
1:00	76	8.0	185	62
1:05	79	5.5	190	51
1:10	78	4.0	180	54
1:15	79	3.5	NA	NA
1:20	78	NA	NA	NA

TABLE J.49

DATE : 8-27-84

OPERATION : LFO 1.0 Vh 130 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
H21	9:50	100	125	0	500
H21	9:50	100	125	0	500
H21	9:50	100	130	0	505
H21	9:50	95	128	0	480
H21	9:50	98	130	0	530
H21	9:50	100	130	0	495
H21	9:50	99	130	0	510
H21	9:50	99	128	0	540
H21	9:51	99	129	-500	500
H21	9:51	98	128	0	530

TABLE J.50

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I22	9:53	70	100	0	480
I22	9:53	68	103	0	465
I22	9:53	68	103	0	480
I22	*9:53	70	100	0	480
I22	9:53	70	100	0	480
I22	9:53	70	105	0	490
I22	9:54	75	100	0	485
I22	9:54	75	105	0	480

TABLE J.51

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I23	9:57	70	105	0	480
I23	9:57	73	105	0	500
I23	9:57	75	106	0	490
I23	9:57	73	105	0	495
I23	*9:57	70	106	0	485
I23	9:57	70	105	0	495
I23	9:57	72	105	0	495
I23	9:57	71	108	0	500
I23	9:57	71	102	0	500

TABLE J.52

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I24	10:01	71	102	0	460
I24	10:01	65	102	0	475
I24	10:01	70	101	0	500
I24	*10:01	70	100	0	495
I24	10:01	70	100	0	500
I24	10:01	71	100	0	495
I24	10:01	70	102	0	490
I24	10:01	70	101	0	495

TABLE J.53

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I25	10:03	75	106	-500	450
I25	10:03	70	104	0	460
I25	10:03	71	102	0	490
I25	10:03	70	104	0	480
I25	10:03	70	103	0	485
I25	*10:03	70	104	0	485
I25	10:03	70	102	0	500
I25	10:04	70	101	0	510
I25	10:04	70	103	0	500
I25	10:04	69	104	0	500
I25	10:04	70	100	0	515

TABLE J.54

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I26	10:06	68	102	0	460
I26	10:06	70	102	0	470
I26	10:06	70	101	0	480
I26	10:06	70	102	0	490

TABLE J.55

DATE : 8-27-84

OPERATION: 150 M. LFO (0.8 VH) 104 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
I27	10:57	65	93	0	490
I27	10:57	65	94	0	485
I27	*10:57	60	90	0	470
I27	10:57	62	92	0	470
I27	10:57	62	95	0	480
I27	10:57	58	90	0	490

TABLE J.56

DATE : 8-27-84

OPERATION: 150 M. LFO (0.7 VH) 91 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
J28	11:04	65	90	0	470
J28	11:04	65	90	0	470
J28	11:04	60	90	0	470
J28	11:05	60	90	0	465
J28	*11:05	65	90	0	480
J28	11:05	62	90	0	485
J28	11:05	63	90	500	500
J28	11:05	63	88	0	485
J28	11:05	60	88	0	490

TABLE J.57

DATE : 8-27-84

OPERATION: 150 M. LFO (0.7 VH) 91 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
J29	11:07	70	93	-500	460
J29	11:07	60	92	0	480
J29	11:07	60	92	0	490
J29	11:07	60	92	0	470
J29	*11:07	58	90	0	470
J29	11:07	60	90	0	480
J29	11:07	62	87	0	480
J29	11:07	62	90	0	500
J29	11:07	65	90	0	505

TABLE J.58

DATE : 8-27-84

OPERATION: 150 M. LFO (0.7 VH) 91 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
J30	11:09	63	90	0	485
J30	11:10	63	90	0	490
J30	*11:10	60	92	0	490
J30	11:10	62	91	0	480
J30	11:10	63	92	0	490
J30	11:10	63	90	0	490

TABLE J.59

DATE : 8-27-84

OPERATION: 150 M. LFO (0.7 VH) 91 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
J31	11:12	64	90	0	500
J31	11:12	65	90	0	490
J31	11:12	63	91	0	495
J31	11:12	63	92	0	490
J31	*11:12	60	91	0	490
J31	11:12	60	89	0	495
J31	11:12	60	88	0	510
J31	11:12	61	90	0	500
J31	11:12	60	85	0	505

TABLE J.60

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K41	12:41	47	57	0	680
K41	12:41	30	57	-500	670
K41	12:41	30	57	-600	580
K41	12:42	35	57	-700	500
K41	12:42	30	58	-700	430
K41	12:42	32	56	-900	320
K41	12:42	40	57	-700	250
K41	12:42	30	60	-600	170
K41	12:42	30	57	-600	100

TABLE J.61

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K42	12:45	45	57	0	690
K42	12:45	40	57	-500	620
K42	12:45	30	59	-700	520
K42	*12:45	29	58	-600	460
K42	12:45	30	58	-700	370
K42	12:45	30	57	-700	250
K42	12:46	30	57	-600	220
K42	12:46	30	56	-700	100

TABLE J.62

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K43	12:49	41	56	0	700
K43	12:49	46	60	-500	670
K43	12:49	30	61	-500	600
K43	12:50	30	57	-500	530
K43	12:50	30	60	-700	460
K43	*12:50	40	56	-600	380
K43	12:50	40	56	-600	320
K43	12:50	30	60	-500	230
K43	12:50	28	57	-700	130
K43	12:50	29	59	-600	70

TABLE J.63

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K44	12:54	20	57	-500	590
K44	12:54	20	58	-600	500
K44	12:54	30	58	-700	420
K44	12:54	30	54	-700	340
K44	12:55	31	52	-800	230

TABLE J.64

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K45	1:00	50	57	0	680
K45	1:00	30	58	-500	620
K45	1:00	30	60	-600	530
K45	1:00	30	58	-700	450
K45	*1:00	30	56	-600	370
K45	1:01	31	57	-600	270
K45	1:01	30	61	-700	210
K45	1:01	30	57	-700	130

TABLE J.65

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
K46	1:05	50	59	0	720
K46	1:05	35	57	-500	660
K46	1:05	33	60	-700	560
K46	1:05	30	57	-500	500
K46	1:05	32	56	-600	430
K46	*1:05	35	55	-600	330
K46	1:05	30	60	-600	250
K46	1:05	30	60	-700	180
K46	1:05	30	51	-600	100

TABLE J.66

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK52	2:12	33	60	-500	600
KK52	2:12	20	55	-600	510
KK52	2:12	28	57	-1000	380
KK52	*2:12	28	55	-1000	250
KK52	2:12	32	57	-700	210
KK52	2:12	40	55	-600	90

TABLE J.67

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK53	2:16	30	56	-500	700
KK53	2:16	30	58	-600	600
KK53	2:16	30	60	-700	520
KK53	2:16	30	57	-700	440
KK53	2:16	32	56	-600	350
KK53	*2:17	38	57	-600	250
KK53	2:17	40	57	-500	230
KK53	2:17	38	58	-500	100

TABLE J.68

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK54	2:23	38	57	-500	700
KK54	2:23	32	58	-700	600
KK54	2:23	30	58	-700	500
KK54	2:23	30	59	-600	410
KK54	*2:23	30	60	-600	320
KK54	2:23	28	55	-700	230
KK54	2:23	40	52	-600	130
KK54	2:24	40	57	-500	80

TABLE J.69

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK55	2:27	32	57	-500	660
KK55	2:27	40	58	-600	550
KK55	2:27	38	58	-600	480
KK55	2:27	27	60	-500	410
KK55	*2:27	28	56	-700	320
KK55	2:27	32	57	-700	230
KK55	2:28	32	55	-600	160
KK55	2:28	38	57	-600	80

TABLE J.71

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK57	2:36	40	54	0	780
KK57	2:36	28	52	-600	590
KK57	2:36	30	57	-700	490
KK57	2:36	30	57	-700	420
KK57	*2:36	35	56	-700	300
KK57	2:37	34	57	-600	250
KK57	2:37	40	57	-600	180
KK57	2:37	35	52	-500	90

TABLE J.70

DATE : 8-28-84

OPERATION: 6 DEGREE APPROACH 57 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
KK56	2:31	40	57	0	700
KK56	2:31	40	56	-500	600
KK56	2:32	30	59	-600	500
KK56	2:32	20	58	-600	420
KK56	*2:32	18	56	-600	330
KK56	2:32	30	55	-700	230
KK56	2:32	38	55	-600	120
KK56	2:32	40	57	-500	70

TABLE J.72

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
M47	1:09	N/A	56	-1200	520
M47	1:10	N/A	43	-1000	370
M47	*1:10	28	43	-1000	240
M47	1:10	18	43	-1000	110
M47	1:10	38	40	-500	80

TABLE J.73

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
M48	1:13	8	90	-1100	700
M48	1:13	7	83	-1200	500
M48	1:14	10	70	-1000	380
M48	1:14	9	58	-1200	260
M48	1:14	10	45	-1000	100

TABLE J.74

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
M49	1:18	50	100	-500	800
M49	1:18	8	85	-1000	690
M49	1:18	8	70	-1000	530
M49	1:19	7	57	-1300	400
M49	*1:19	10	50	-1100	250
M49	1:19	18	40	-1000	120
M49	1:19	55	37	-500	80

TABLE J.75

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
M50	1:22	55	98	0	800
M50	1:23	10	80	-600	720
M50	1:23	8	60	-1000	600
M50	1:23	10	57	-1000	480
M50	*1:23	15	50	-1100	320
M50	1:23	20	40	-1000	200
M50	1:23	30	35	-700	80

TABLE J.76

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 1

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
M51	1:27	18	95	-1100	700
M51	1:28	5	78	-1100	570
M51	1:28	7	62	-1000	440
M51	*1:28	22	57	-1000	340
M51	1:28	20	45	-1000	230
M51	1:28	22	37	-800	100

TABLE J.77

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
MM58	2:40	7	83	-1000	550
MM58	2:41	5	74	-1100	400
MM58	*2:41	5	58	-1200	240
MM58	2:41	30	40	-800	140
MM58	2:41	30	40	-500	70

TABLE J.78

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
MM59	2:44	10	88	-700	680
MM59	2:44	15	70	-1200	560
MM59	2:44	15	60	-1200	420
MM59	*2:44	20	50	-1200	320
MM59	2:44	28	40	-1200	190
MM59	2:44	30	43	-600	100
MM59	2:44	50	38	-500	70

TABLE J.79

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
MM60	2:48	74	110	0	800
MM60	2:48	10	88	-800	670
MM60	2:48	10	70	-1200	530
MM60	2:48	18	61	-1200	420
MM60	*2:48	20	44	-1200	290
MM60	2:48	30	42	-800	200
MM60	2:49	33	38	-600	110
MM60	2:49	50	30	-500	60

TABLE J.80

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
MM61	2:52	10	85	-1200	580
MM61	2:52	17	70	-800	470
MM61	*2:52	11	52	-1200	350
MM61	2:53	18	42	-1300	250
MM61	2:53	30	42	-1200	110
MM61	2:53	N/A	43	0	70

TABLE J.81

DATE : 8-28-84

OPERATION: BELL QUIET APPROACH 110 TO 45 KTS.

PILOT : 2

EVENT	TIME	TORQUE (%)	IAS (KTS)	RATE OF C/D (FPM)	ALT (AGL) (FT)
MM62	2:56	22	100	-1000	760
MM62	2:56	10	70	-1100	620
MM62	2:56	12	62	-1000	500
MM62	*2:56	12	53	-1000	360
MM62	2:56	19	41	-1300	230
MM62	2:56	32	40	-700	120
MM62	2:57	60	42	-500	70

APPENDIX K

Flight Engineer Log

The flight engineer log is the real-time on-board log of the helicopter's instruments. The data was taken manually at centerline center for each event and includes:

Main rotor torque in percent,
Indicated airspeed (IAS) in knots,
Rate of climb/descent in feet per minute,
Altitude above ground level (AGL) at center line center (CL-C), and
Additional comments.

TABLE K.1.1

FLIGHT ENGINEER LOG

TEST DATE: 8/27/84

EVENT NUMBER	M/R (%) TORQUE	IAS (KTS)	RATE OF C/D (FPM)	ALTITUDE (AGL')CL-C	COMMENTS
A	88	117	0	490	
A2	85	117	0	490	
A3	85	117	0	490	727 Tb
A4	84	117	0	490	
A5	87	117	0	490	
A6	85	117	0	490	
A7	86	117	0	490	NO CAMERA
A8	85		0	490	"
G9	90	117	0	984	
G10	88	117	0	984	
G11	90	117	0	984	
G12	90	117	0	984	
G13	86	117	0	984	
G14	87	117	0	984	
G15	86	117	0	984	
G16	88	117	0	984	
H17	100	125	0	492	
H18	100	130	0	492	
H19	100	130	0	492	
H20	100	130	0	492	
H21	100	130	0	492	
I22	70	104	0	492	
I23	72	104	0	492	
I24	70	104	0	492	
I25	70	104	0	492	
I26	68	104	0	492	
J27	62	91	0	492	
J28	64	90	0	492	
J29	59	88	0	490	
J30	62	92	0	480	
J31	61	90	0	492	
C32	22	57	700	440	
B33	100	57	1200	400	- RPM DROP
C34	35	57	600	440	
B35	100	57	1500	440	- RPM DROP
C36	30	57	800	440	
B37	100	57	1100	400	- RPM DROP
C38	25	57	700	440	
B39	100	57	1500	400	- RPM DROP
C40	35	57	500-	450	
B41	100	55	1400+	380	- RPM DROP
C42	45	55	400-	410	
B43	100	50	1200+	410	- RPM DROP
C44	38	53	700-	400	
B45	100	52	1300+	400	

TABLE K.1.2

FLIGHT ENGINEER LOG

TEST DATE: 8/27/84

EVENT NUMBER	M/R (%) TORQUE	IAS (KTS)	RATE OF C/D (FPM)	ALTITUDE (AGL')CL-C	COMMENTS
C46	28	57	600-	440	
B47	100	57	1600+	400	(RPM)
C48	18	60	900-	400	RPM + (102%)
B49	100	57	1200+	380	
C50	32	57	500	420	
B51	100	54	1200	400	(97% Nr)
B52	100	55	1500	400	97%
				HEADING	
E300	12	0		300	
E301	30	0		300	
D300	30			300	
E345	12			345	
D345	30			345	
E030	30			030	
D030	30			030	
E075	12			075	
E120	31			120	
E165	12			165	
D165	30			165	
E250	12			250	
E250	12			250	
F250	84			5'	
F300	85				
F345	85				

TABLE K.2.1

FLIGHT ENGINEER LOG

TEST DATE: 8/28/84

EVENT NUMBER	M/R (%) TORQUE	IAS (KTS)	RATE OF C/D (FPM)	ALTITUDE (AGL')CL-C	COMMENTS
AA-1	86	118	0	490	
AA-2	86	117	0	480	
AA-3	84	119	0	480	
AA-4	86	117	0	490	
AA-5	84	117	0	480	
AA-6	86	118	0	500	
AA-7	84	117	0	480	
AA-8	85	117	0	480	
CC-9	25	57	700	400	
BB-11	100	58	1200	480	
CC-12	26	58	700	440	
BB-13	100	60	1250	480	
CC-14	22	55	900	400	
BB-15	98	57	1100	440	
CC-16	27	58	800	420	
BB-17	97	58	1050	440	
CC-18	32	57	700	375	
BB-19	97	57	1100	500	100'AT ROTATION
CC-20	32	57	700	440	
BB-21	100	57	1200	500	100'AT ROTATION
CC-22	36	57	800	390	
BB-23	100	60	950	520	100' AT ROTATION
CC-24	29	57	750	440	
BB-25	100	62	1000	490	100' AT ROTATION
		SWITCH PILOTS			
AZ26	85	117	0	490'	
AZ27	88	119	0	530'	COMP. ALT. STG
AZ28	87	119	0	520'	
AZ29	86	117	0	525'	
AZ30	88	117	0	530'	
CZ31	32	57	650-	430	
BZ32	100	57	1200+	450	
CZ33	30	58	800-	440	
BZ34	100	56	1300+	445	
CZ35	28	57	700-	400	
BZ36	100	57	1200	480	
CZ37	27	62	750	440	
BZ38	100	57	1000	450	
CZ39	30	55	650	380	
BZ40	100	55	1400	480	
KZ41	32	56	700		
KZ42	28	57	750	460	
KZ43	33	56	600	400	
KZ44	27	58	650	440	
KZ45	29	55	600	400	
KZ46	35	75	600	400	

TABLE K.2.2

FLIGHT ENGINEER LOG

TEST DATE: 8/28/84

EVENT NUMBER	M/R (%) TORQUE	IAS (KTS)	RATE OF C/D (FPM)	ALTITUDE (AGL')CL-C	COMMENTS
M47	18	45	1000	300	NR+
M48	05	70	1200	450	NR+
M49	09	54	1300	350	NR+
M50	8	58	1200	450	
M51	12	0	0	400	
P-	DAVE		CP-	BOB	
KK52	28	57	700	360	
KK53	36	57	700	350	
KK54	28	60	750	375	
KK55	22	55	700	390	
KK56	20	56	700	375	
KK57	34	55	700	375	
MM58	6	65	1200	375	NR+
MM59	20	50	900	375	
MM60	28	50	900	350	
MM61	20	50	850	400	
MM62	14	60	950	450	

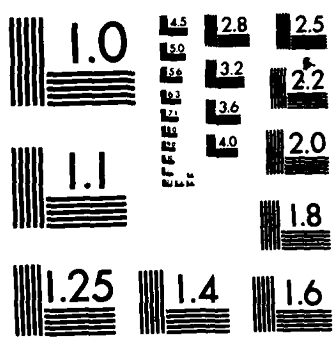
AD-A159 898 INTERNATIONAL CIVIL AVIATION ORGANIZATION HELICOPTER NOISE MEASUREMENT RE (U) FEDERAL AVIATION ADMINISTRATION WASHINGTON DC OFFICE OF ENVIR 5/5

UNCLASSIFIED J S NEWMAN ET AL SEP 85 FAA/EE-85-6 F/G 14/2 NL

END

FILMED

DTIC



MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE K.3

FLIGHT ENGINEER LOG

TEST DATE: 8/29/84

EVENT NUMBER	M/R (%) TORQUE	IAS (KTS)	RATE OF C/D (FPM)	ALTITUDE (AGL')CL-C	COMMENTS
BY-1		60	1000	800	98% RPM
CY-2		60	800	700	
BY-3		60	1000	750	
CY-4		55	700	650	
BY-5		60	1300	730	
CY-6		55	600	600	
EY120	13%				73 F
DY120	30%				73 F
EY165	13%				73 F
DY165	30%				73 F
EY210	13%				73 F
DY210	30%				73 F
DY255	13%				73 F
EY300	30%	TIME MARK 953 00 SEC			73 F
DY300	13%				73 F
EY345	30%				73 F
DY345	13%				73 F
EY030	30%				76 F
DY030	30%				76 F
DY075	30%				76 F
DY120	30%				76 F
BY-7	100%	60	1200	1000	
CY8	35%	55	700	700	
BY9	100%	55	1000	1000	
CY10	34%	56	700	700	
BY11	100%	57	1100	1150	
CY12	34%	55	650	700	
BY13	100%	55-70	1200	1200	
CY14	32%	56	700	700	
BY15	99%	55	1100	1200	
CY16	34%	58	600	700	
BY17	98%	57	1000	1200	
CY18	32%	57	600	700	
AY19		117		490	
AY20	84%	115		440-490	
AY21	88%	118		450-490	
AY22	86%	120		460-500	
AY23	88%	122		520-550	
AY24	88%	118		510-520	
AY25	90%	119		490-590	
AY26	80%	119		520-540	
AY27	82%	118		530-	
AY28	84%	118		510	
AY29	88%	117		530	
AY30	88-92	115		540	

APPENDIX L

Summary EPNL Certification Levels

The summary EPNL certification level tables show EPNL data for each test run in a series at three microphone sites: right sideline, centerline center, and left sideline. Averages are presented for each test run as well as for each microphone site. Most importantly, an average for the whole series is presented; that number represents the EPNL certification number. The standard deviation and the 90% confidence level (C.I.) are also presented, both by microphone and for the three-microphone average.

TABLE L.1

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-27-84

OPERATION: 150 M FLYOVER--TARGET IAS=117 KTS--0.9 VH

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
A1	86.60	87.20	87.40	87.07
A2	86.60	87.20	87.20	87.00
A4	86.60	87.20	87.90	87.23
A5	85.50	86.60	87.10	86.40
A6	86.30	86.60	87.10	86.67
A7	86.30	86.30	87.20	86.60
A8	86.30	86.80	87.40	86.83
AVERAGE	86.31	86.84	87.33	86.83
STD.DEV.	0.39	0.36	0.28	0.29
90% C.I.	0.29	0.27	0.21	0.23

TABLE L.2

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 150 M FLYOVER--TARGET IAS=117 KTS--0.9 VH

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
AZ27	86.70	87.70	87.80	87.40
AZ28	86.40	87.90	87.80	87.37
AZ29	86.10	87.70	87.50	87.10
AZ30	86.00	87.60	87.70	87.10
AVERAGE	86.30	87.73	87.70	87.24
STD.DEV.	0.32	0.13	0.14	0.16
90% C.I.	0.37	0.15	0.17	0.22

TABLE L.3

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 150 M FLYOVER--TARGET IAS=117 KTS--0.9 VH

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
AA2	86.40	87.60	87.30	87.10
AA3	86.60	88.20	87.20	87.33
AA5	85.60	87.00	87.30	86.63
AA6	86.40	87.40	87.10	86.97
AA7	85.20	87.40	87.20	86.60
AA8	86.80	87.10	87.70	87.20
AVERAGE	86.17	87.45	87.30	86.97
STD.DEV.	0.63	0.43	0.21	0.30
90% C.I.	0.51	0.35	0.17	0.27

TABLE L.4

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-29-84

OPERATION: 150 M FLYOVER--TARGET IAS=117 KTS--0.9 VH

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
AY19	88.80	86.10	88.40	87.77
AY20	88.00	87.10	88.30	87.80
AY21	87.70	86.90	89.00	87.87
AY22	NA	86.50	NA	0.00
AY23	87.60	87.50	89.00	88.03
AY24	NA	88.00	NA	0.00
AY25	87.60	87.40	89.00	88.00
AY27	NA	87.60	89.00	0.00
AY28	85.80	86.60	88.30	86.90
AY29	87.30	87.00	88.00	87.43
AY30	85.70	86.70	88.40	86.93
AVERAGE	87.31	87.04	88.60	87.59
STD.DEV.	1.06	0.56	0.40	0.45
90% C.I.	0.71	0.30	0.25	0.33

TABLE L.5

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-27-84

OPERATION: TAKEOFF--TARGET IAS=57 KTS--ICAO

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
B33	87.00	86.50	86.60	86.70
B37	NA	86.10	87.10	0.00
B39	86.70	86.80	87.50	87.00
B41	86.00	86.30	86.90	86.40
B43	85.70	87.40	85.70	86.27
B45	85.90	87.00	87.00	86.63
B47	86.40	87.30	87.30	87.00
B49	86.50	86.70	87.20	86.80
B52	85.70	86.20	86.70	86.20
AVERAGE	86.24	86.70	86.89	86.62
STD.DEV.	0.48	0.47	0.53	0.31
90% C.I.	0.32	0.29	0.33	0.22

TABLE L.6

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: TAKEOFF--TARGET IAS=57 KTS--ICAO

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
BZ32	86.00	86.20	87.40	86.53
BZ34	86.50	86.30	87.50	86.77
BZ36	85.90	86.70	87.70	86.77
BZ38	85.50	86.30	86.70	86.17
BZ40	85.70	86.50	87.60	86.60
AVERAGE	85.92	86.40	87.38	86.57
STD.DEV.	0.38	0.20	0.40	0.25
90% C.I.	0.36	0.19	0.38	0.26

TABLE L.7

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: TAKEOFF--TARGET IAS=57 KTS--ICAO

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
BB11	86.60	88.40	87.80	87.60
BB13	86.40	88.80	88.30	87.83
BB15	87.00	87.10	86.70	86.93
BB17	86.40	87.00	86.40	86.60
BB19	85.70	86.60	86.40	86.23
BB23	86.50	88.50	87.60	87.53
BB25	87.00	87.70	87.80	87.50
AVERAGE	86.51	87.73	87.29	87.18
STD.DEV.	0.44	0.86	0.77	0.59
90% C.I.	0.32	0.63	0.57	0.47

TABLE L.8

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-29-84

OPERATION: TAKEOFF--TARGET IAS=57 KTS--ICAO

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
BY3	87.80	88.40	88.40	88.20
BY5	87.20	89.10	88.50	88.27
BY9	87.30	89.30	90.10	88.90
BY11	87.00	88.40	NA	0.00
BY13	87.50	88.30	88.30	88.03
BY15	87.20	92.40	89.60	89.73
BY17	87.50	89.90	88.80	88.73
AVERAGE	87.36	89.40	88.95	88.64
STD.DEV.	0.26	1.45	0.73	0.63
90% C.I.	0.19	1.06	0.60	0.57

TABLE L.9

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-27-84

OPERATION: 6 DEGREE APPROACH--TARGET IAS=57 KTS--ICAO

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
C32	91.90	91.30	NA	0.00
C34	91.10	92.90	88.10	90.70
C36	91.70	91.90	NA	0.00
C38	91.70	93.00	NA	0.00
C40	90.40	93.70	87.90	90.67
C42	88.90	93.00	87.40	89.77
C44	90.60	93.00	87.10	90.23
C46	92.40	92.70	86.60	90.57
C48	90.50	90.60	86.50	89.20
C50	90.80	92.50	86.90	90.07
AVERAGE	91.00	92.46	87.21	90.17
STD.DEV.	1.00	0.93	0.62	0.55
90% C.I.	0.58	0.54	0.45	0.43

TABLE L.10

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH--TARGET IAS=57 KTS--ICAO

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
CZ31	90.40	93.00	87.60	90.33
CZ33	90.80	93.00	87.00	90.27
CZ35	91.70	93.00	86.40	90.37
CZ37	90.90	92.60	85.90	89.80
CZ39	88.40	92.10	87.80	89.43
AVERAGE	90.44	92.74	86.94	90.04
STD.DEV.	1.23	0.40	0.80	0.41
90% C.I.	1.18	0.38	0.76	0.44

TABLE L.11

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH--TARGET IAS=57 KTS--ICAO

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
CC10	92.10	92.90	85.70	90.23
CC12	90.90	92.90	86.10	89.97
CC14	88.50	90.40	NA	0.00
CC16	90.40	90.40	85.00	88.60
CC18	90.80	93.40	85.80	90.00
CC20	91.80	92.90	87.00	90.57
CC22	90.10	93.50	88.70	90.77
CC24	91.50	93.20	86.40	90.37
AVERAGE	90.76	92.45	86.39	90.07
STD.DEV.	1.14	1.29	1.19	0.71
90% C.I.	0.76	0.86	0.88	0.56

TABLE L.12

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-29-84

OPERATION: 6 DEGREE APPROACH--TARGET IAS=57 KTS--ICAO

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
CY2	90.70	92.10	86.10	89.63
CY4	92.10	92.90	87.20	90.73
CY6	91.20	92.80	NA	0.00
CY8	92.10	92.80	87.60	90.83
CY10	92.30	93.60	86.90	90.93
CY12	91.90	92.30	86.70	90.30
CY14	92.60	92.80	87.10	90.83
CY16	90.60	93.30	87.90	90.60
CY18	89.10	92.60	87.40	89.70
AVERAGE	91.40	92.80	87.11	90.45
STD.DEV.	1.11	0.46	0.56	0.52
90% C.I.	0.69	0.28	0.37	0.37

TABLE L.13

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH--NO GUIDANCE

PILOT: 1

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
K41	91.80	93.10	86.50	90.47
K42	92.10	93.00	86.70	90.60
K43	90.60	92.30	87.00	89.97
K45	91.10	93.30	87.10	90.50
K46	90.20	93.20	87.90	90.43
AVERAGE	91.16	92.98	87.04	90.39
STD.DEV.	0.80	0.40	0.54	0.25
90% C.I.	0.76	0.38	0.51	0.26

TABLE L.14

SUMMARY EPNL CERTIFICATION LEVELS (DB)

TEST DATE: 8-28-84

OPERATION: 6 DEGREE APPROACH--NO GUIDANCE

PILOT: 2

EVENT NUMBER	RIGHT SIDELINE	CENTER SITE	LEFT SIDELINE	AVERAGE
KK52	89.40	90.30	84.90	88.20
KK53	90.60	93.40	86.50	90.17
KK54	90.60	92.40	86.90	89.97
KK55	91.40	90.60	86.00	89.33
KK56	90.50	89.90	84.70	88.37
KK57	91.70	92.40	87.20	90.43
AVERAGE	90.70	91.50	86.03	89.41
STD.DEV.	0.80	1.42	1.04	0.95
90% C.I.	0.66	1.17	0.85	0.85

APPENDIX M

A-Weighted Time Histories

Slow-response A-weighted time histories for the centerline microphone location are contained in this appendix. Other time histories are on file. The x-axis is time in seconds. Each segment between the heavy black vertical lines equals 12 seconds. The y-axis shows A-weighted sound level in decibels. Each segment between the heavy black horizontal lines is 5 dB. A reference value of 70 dB is marked on each graph. A dark horizontal line was drawn to indicate a 10 dB drop from the peak noise level. Tables are presented for each test run, in alphabetical order.

TABLE M.1 .

A-WEIGHTED TIME HISTORIES
TEST SERIES A
150 m. FLYOVER -- TARGET IAS 117 kts. -- 0.9Vh

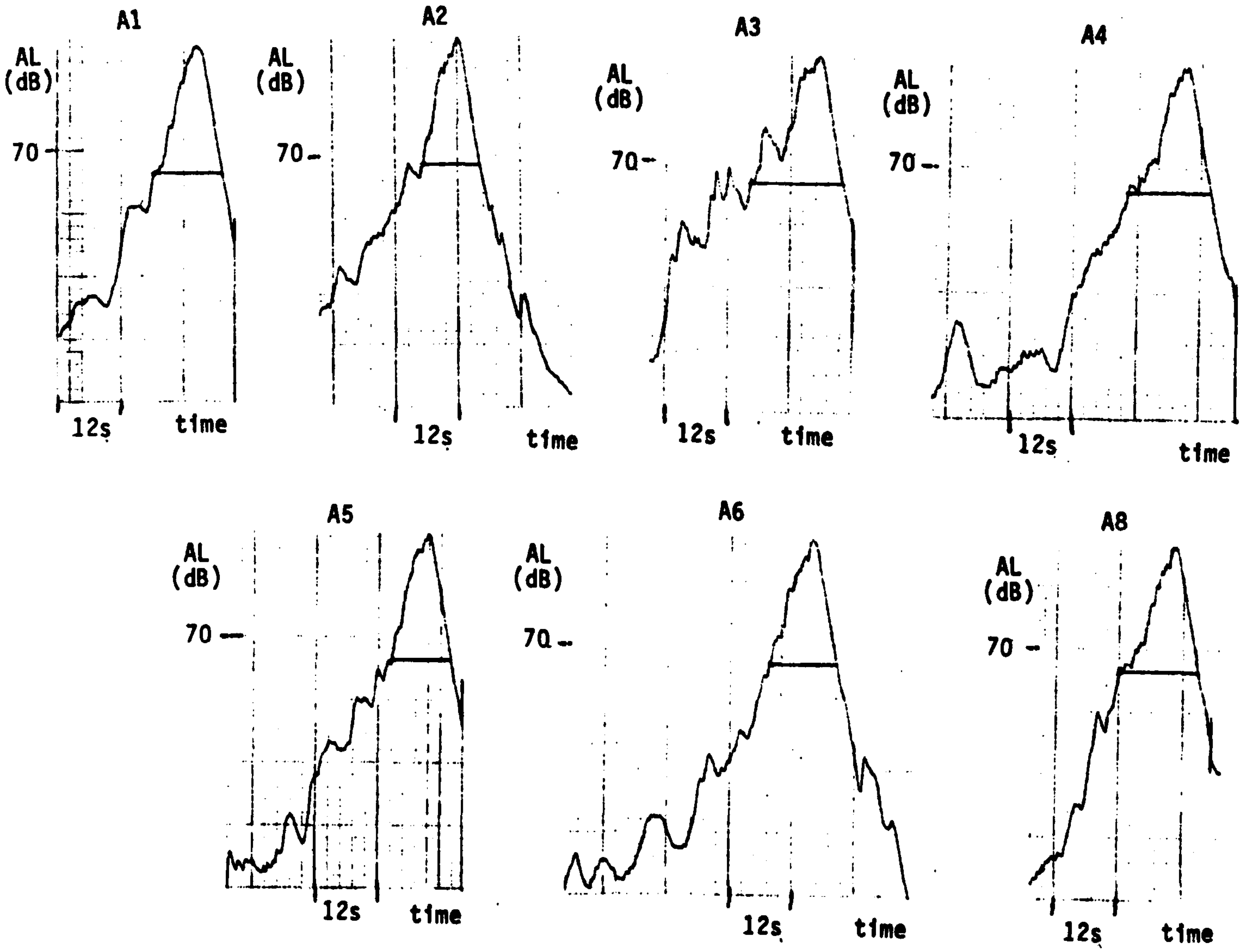


TABLE M.2

A-WEIGHTED TIME HISTORIES
TEST SERIES AA
150 m. FLYOVER -- TARGET IAS 117 kts. -- 0.9 Vh

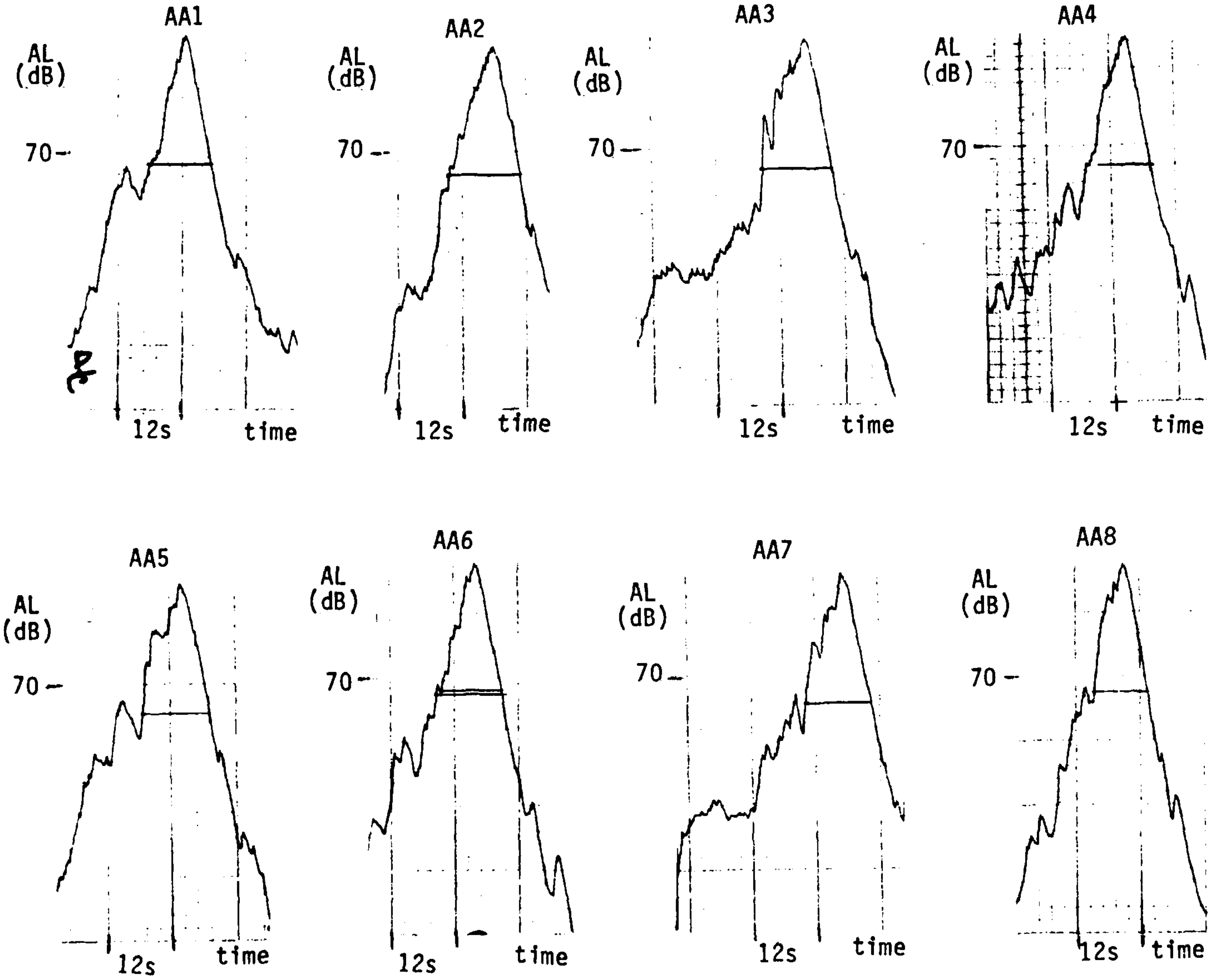


TABLE N.3.5

LEVEL FLYOVER PROPAGATION - PNL

SERIES AZ- 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNL WEIGHTED AVERAGE
SERIES AZ	N=	4	4	4	
469' (0.9Vh)	AVG PNL=	88.4	89.6	88.8	88.93
	STD DEV=	1.2	.6	.3	
SERIES G	N=	7	7	7	
994' (0.9VH)	AVG PNL=	82.4	82.1	82.6	82.37
	STD DEV=	.4	.5	.7	

K= ΔdB / LOG (994/469) ΔdB = 6.57

K= 6.57/.326

K= 20.13

TABLE N.4.1

LEVEL FLYOVER PROPAGATION - AL

SERIES AY- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	AL WEIGHTED AVERAGE
SERIES AY	N=	11	11	11	
477' (0.9Vh)	AVG AL=	76.9	77.1	77.7	77.23
	STD DEV=	1.4	1.1	1.1	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG AL=	70.6	70.3	70.9	70.60
	STD DEV=	.7	.6	.7	

K= ΔdB / LOG (994/477)　　　　ΔdB = 6.63

K= 6.63/.319

K= 20.79

TABLE N.4.2

LEVEL FLYOVER PROPAGATION - EPNL

SERIES AY- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	EPNL WEIGHTED AVERAGE
SERIES AY	N=	10	11	11	
477' (0.9Vh)	AVG EPNL=	87.7	87.9	88.5	88.04
	STD DEV=	.7	.7	.6	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG EPNL=	83.3	82.9	83.7	83.30
	STD DEV=	.2	.4	.3	

K= ΔdB / LOG (994/477)　　　　ΔdB = 4.74

K= 4.74/.319

K= 14.87

APPENDIX N

Air to Ground Propagation Analysis Tables

The tables that follow compare each of the 150 meter level flyover test series (that is, A, AZ, AA and AY) to the 300 meter level flyover test series (G) for the AL, EPNL, SEL, $PNLT_M$, and PNL metrics. As measured data for centerline center, sideline left, and sideline right microphone sites are given along with the sample size, average, and standard deviation. A-weighted average of the three microphones is computed and the change in dB is calculated. Finally, the propagation constant (K) is calculated and given at the bottom of each table. The reader may consult Section 8.8 for a full description and summary of the analysis.

TABLE M.13

A-WEIGHTED TIME HISTORIES
TEST SERIES CZ
6 DEGREE APPROACH -- TARGET IAS 57 kts. -- ICAO

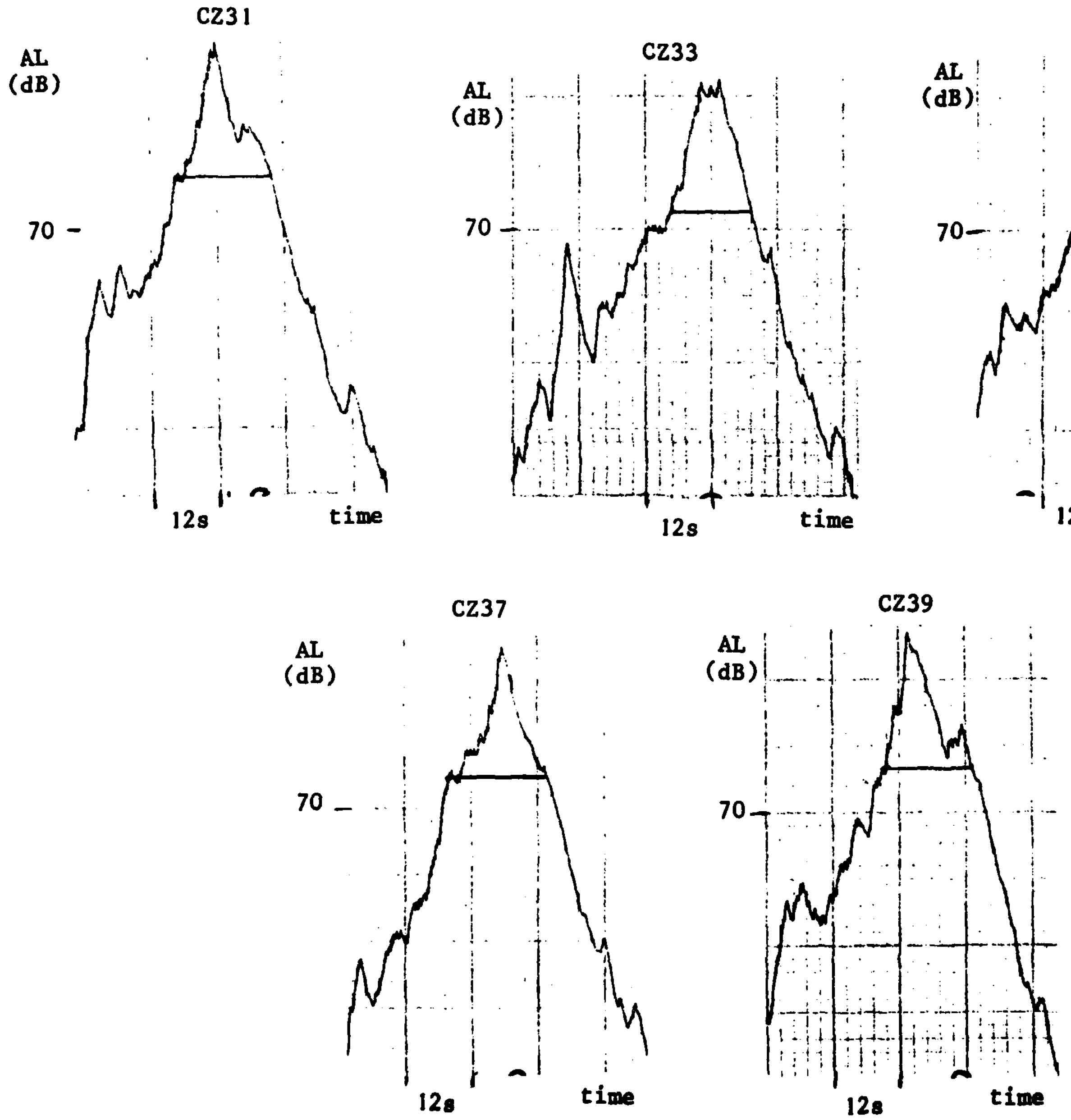
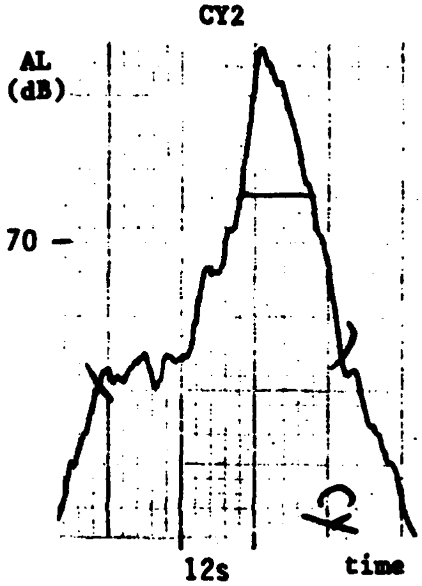
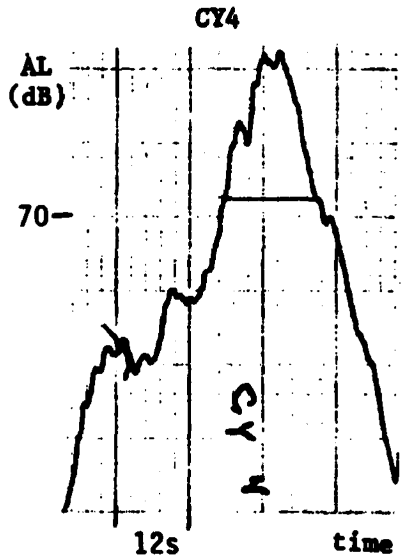
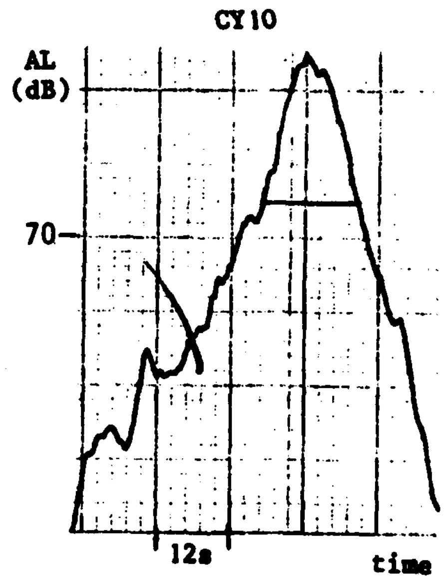


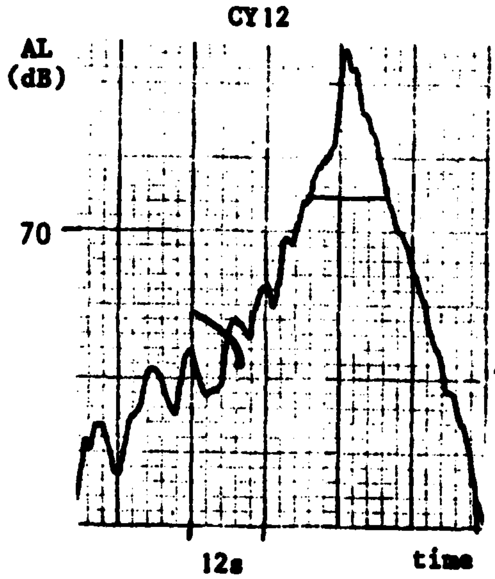
TABLE M.12

A-WEIGHTED TIME HISTORIES
TEST SERIES CY
6 DEGREE APPROACH -- TARGET IAS 57 kts. -- ICAO









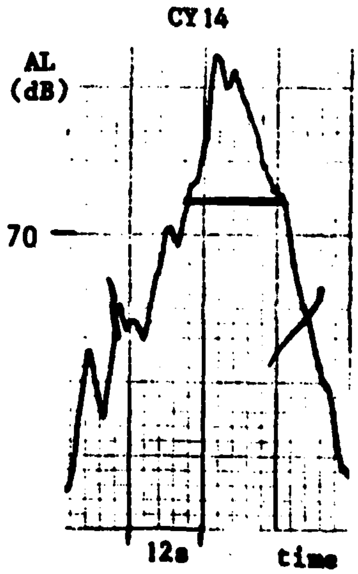


TABLE M.11

A-WEIGHTED TIME HISTORIES
TEST SERIES CC
6 DEGREE APPROACH -- TARGET IAS 57 kts. -- ICAO

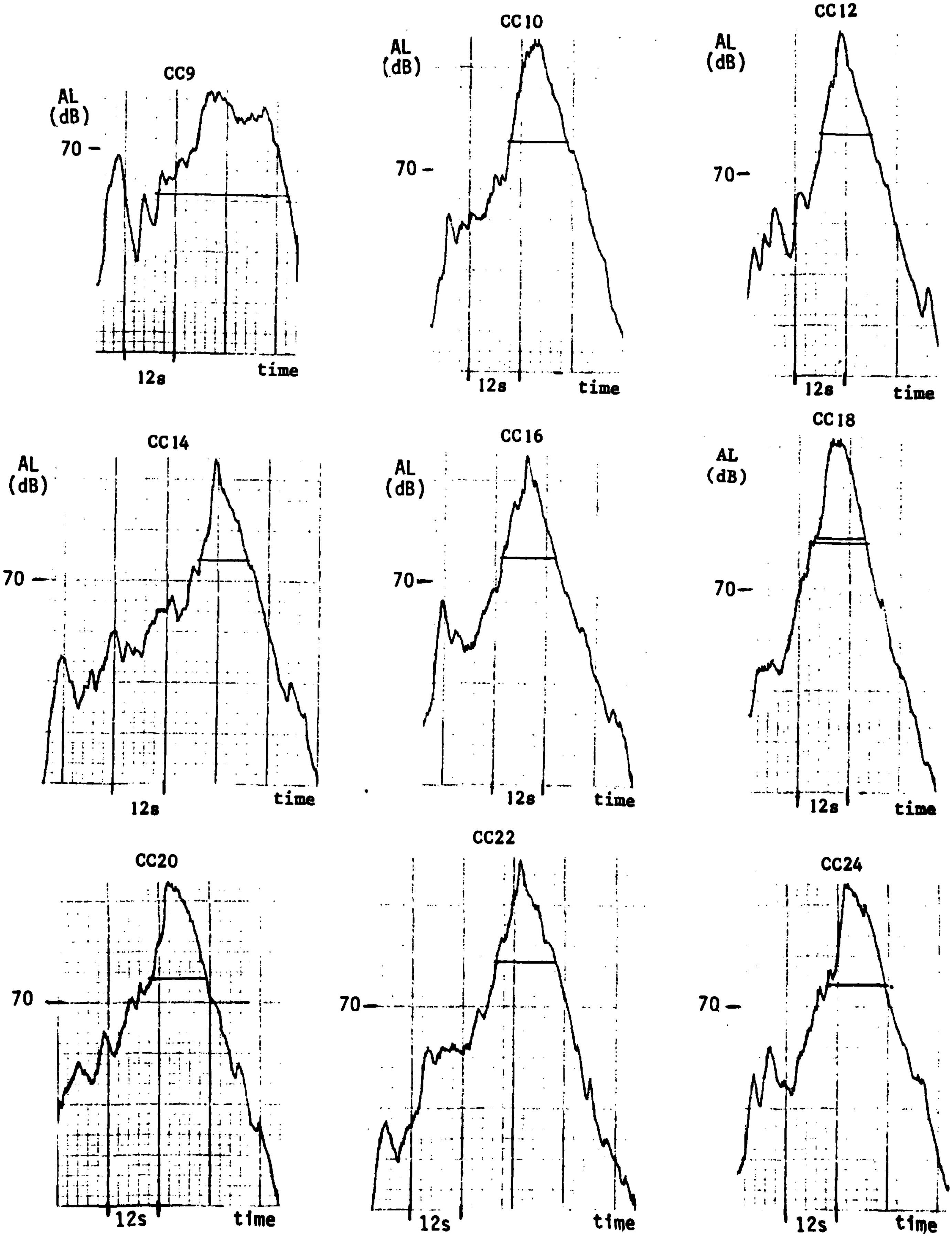
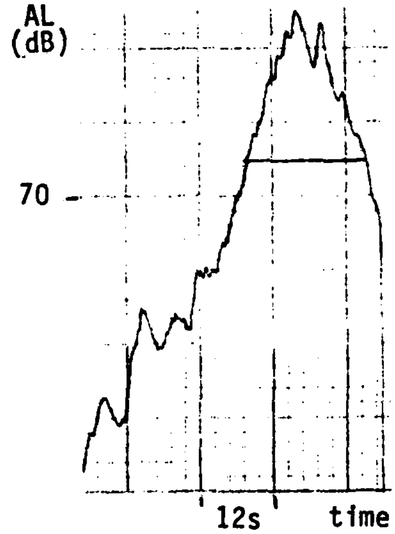


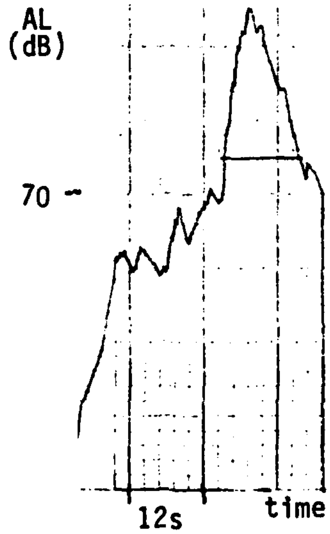
TABLE M.10

A-WEIGHTED TIME HISTORIES
TEST SERIES C
6 DEGREE APPROACH -- TARGET IAS 57 kts. -- ICAO

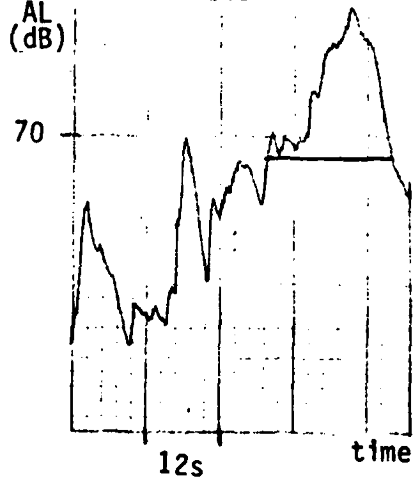
C44



C46



C48



C50

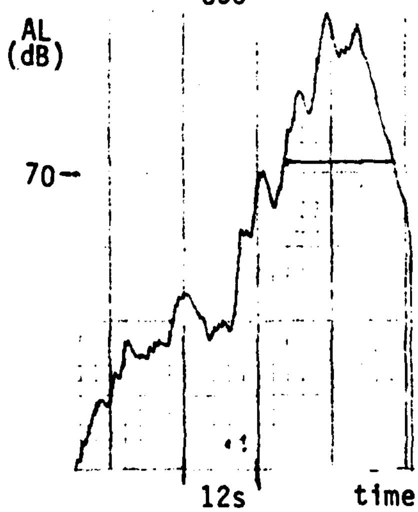


TABLE M.9

A-WEIGHTED TIME HISTORIES
TEST SERIES C
6 DEGREE APPROACH -- TARGET IAS 57 kts. -- ICAO

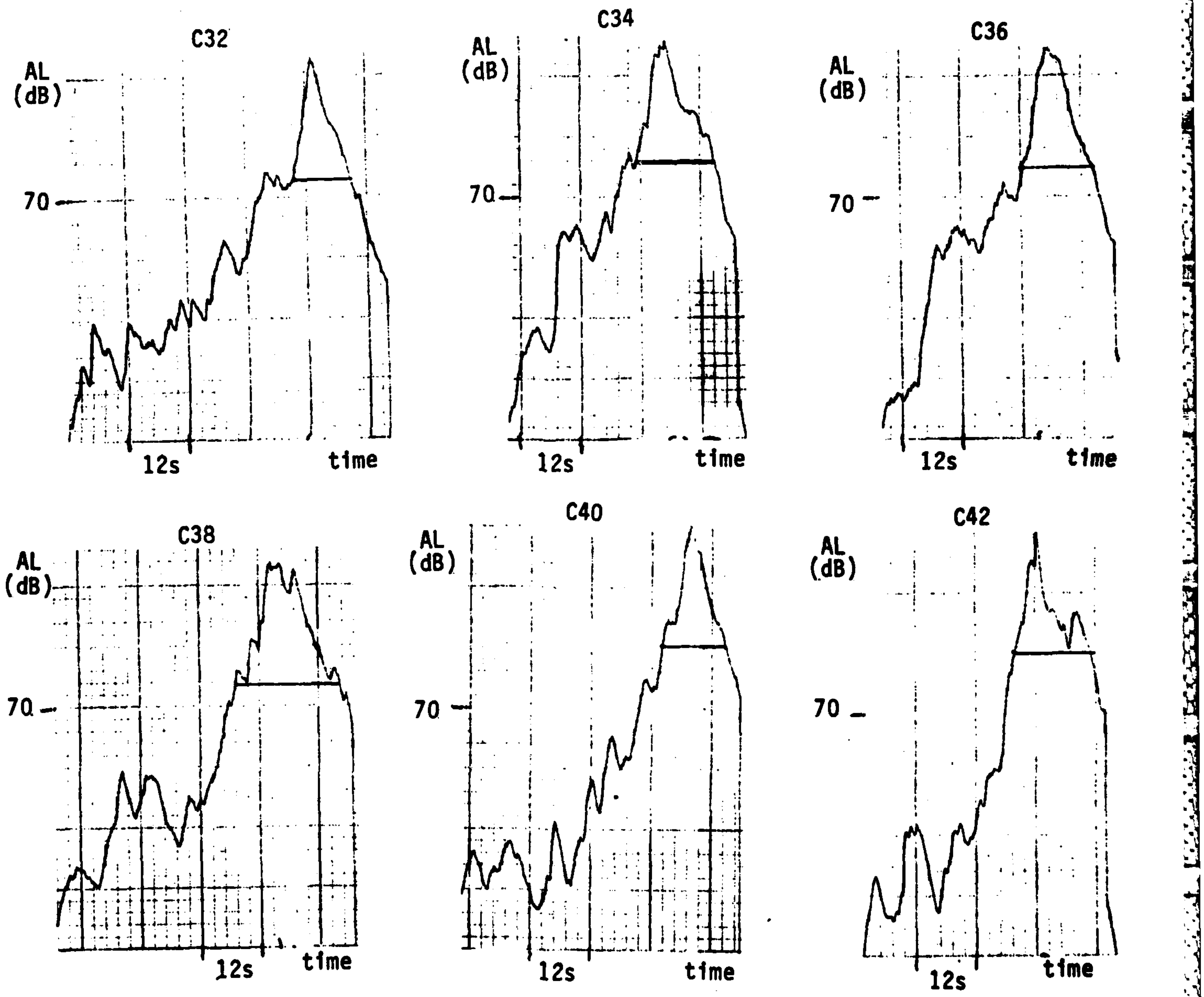


TABLE M.8

A-WEIGHTED TIME HISTORIES
TEST SERIES BZ
TAKEOFF -- TARGET IAS 57 kts. -- ICAO

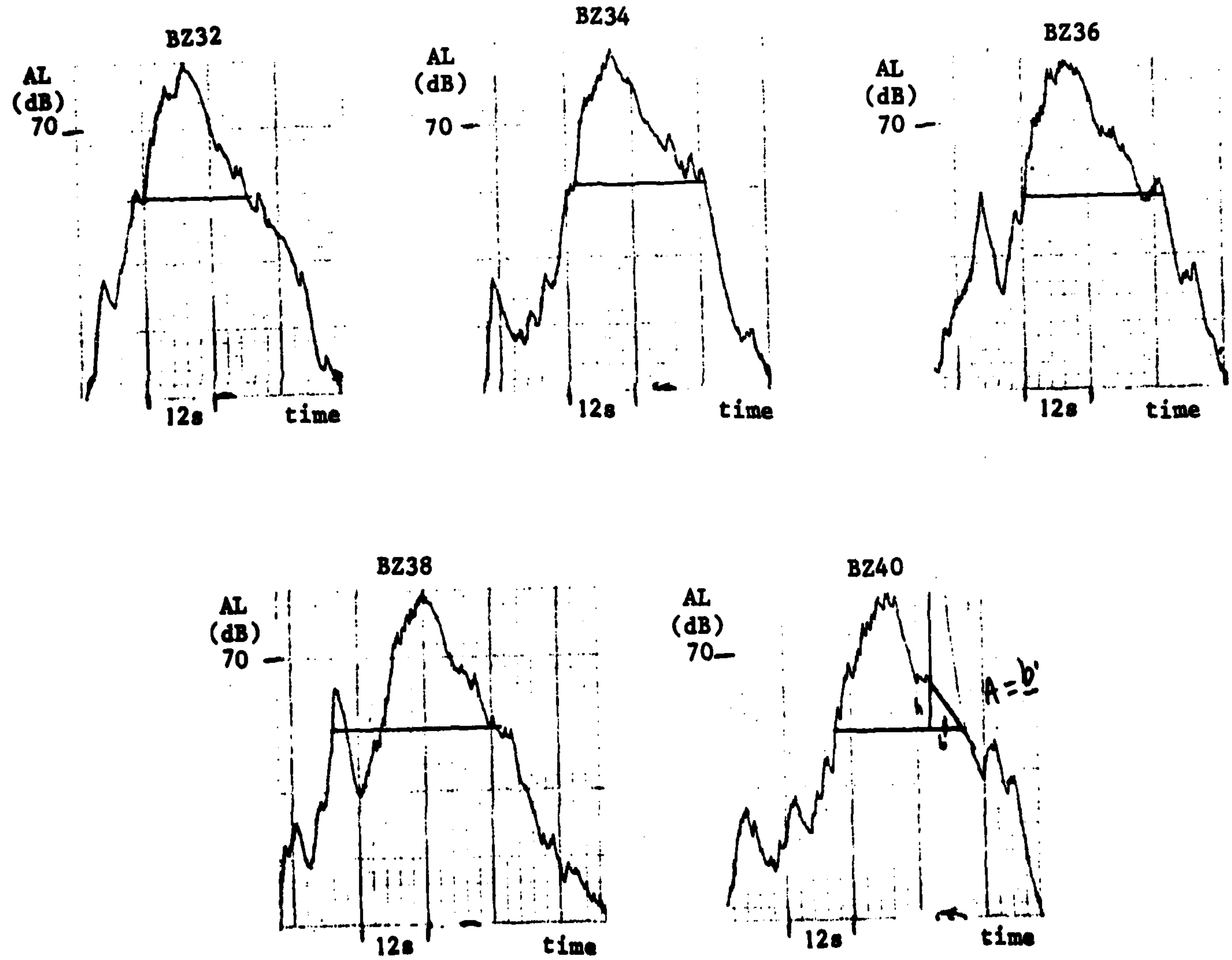


TABLE M.7

A-WEIGHTED TIME HISTORIES
TEST SERIES BY
TAKEOFF -- TARGET IAS 57 kts. -- ICAO

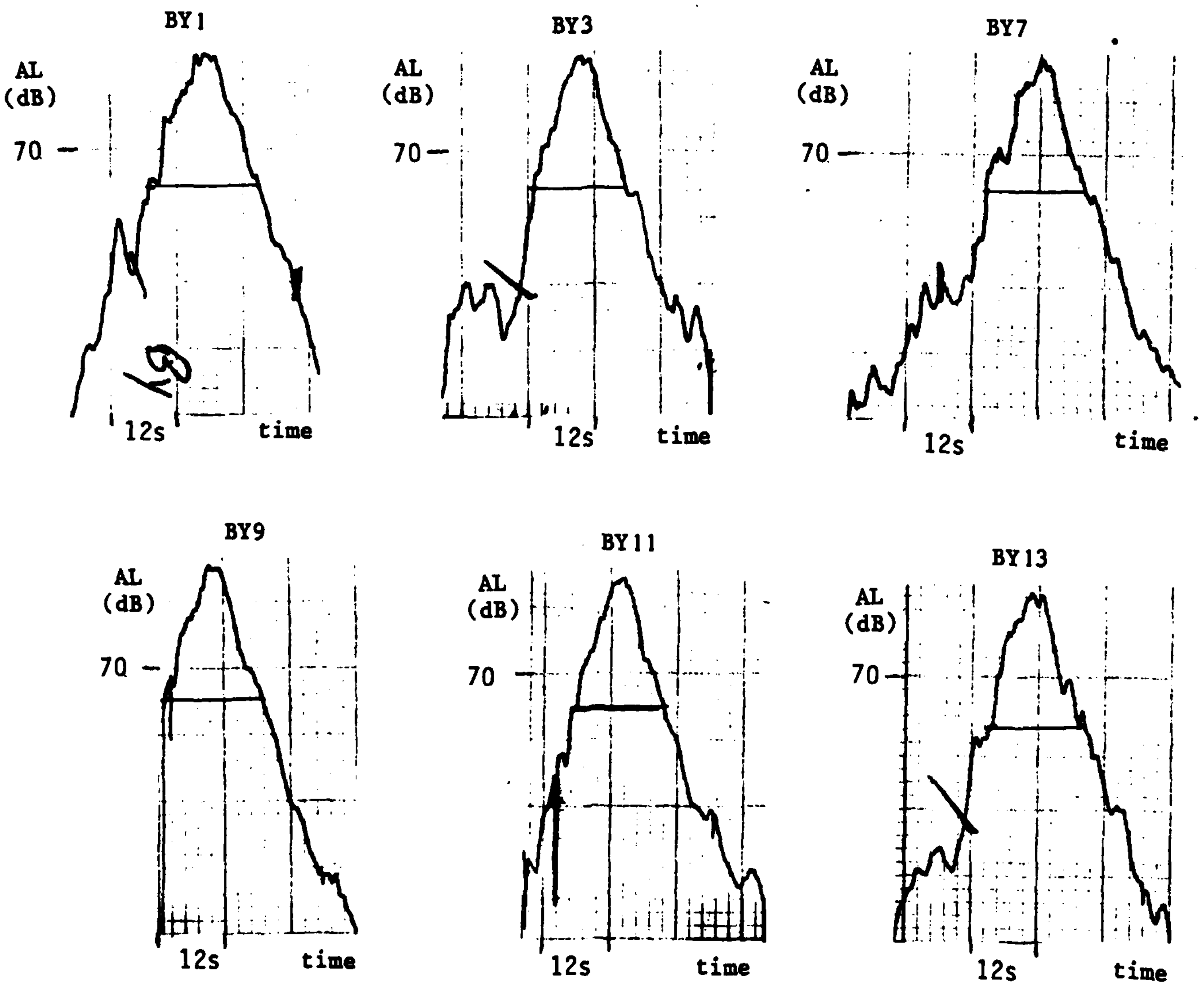


TABLE M.6

A-WEIGHTED TIME HISTORIES
TEST SERIES BB
TAKEOFF -- TARGET IAS 57 kts. -- ICAO

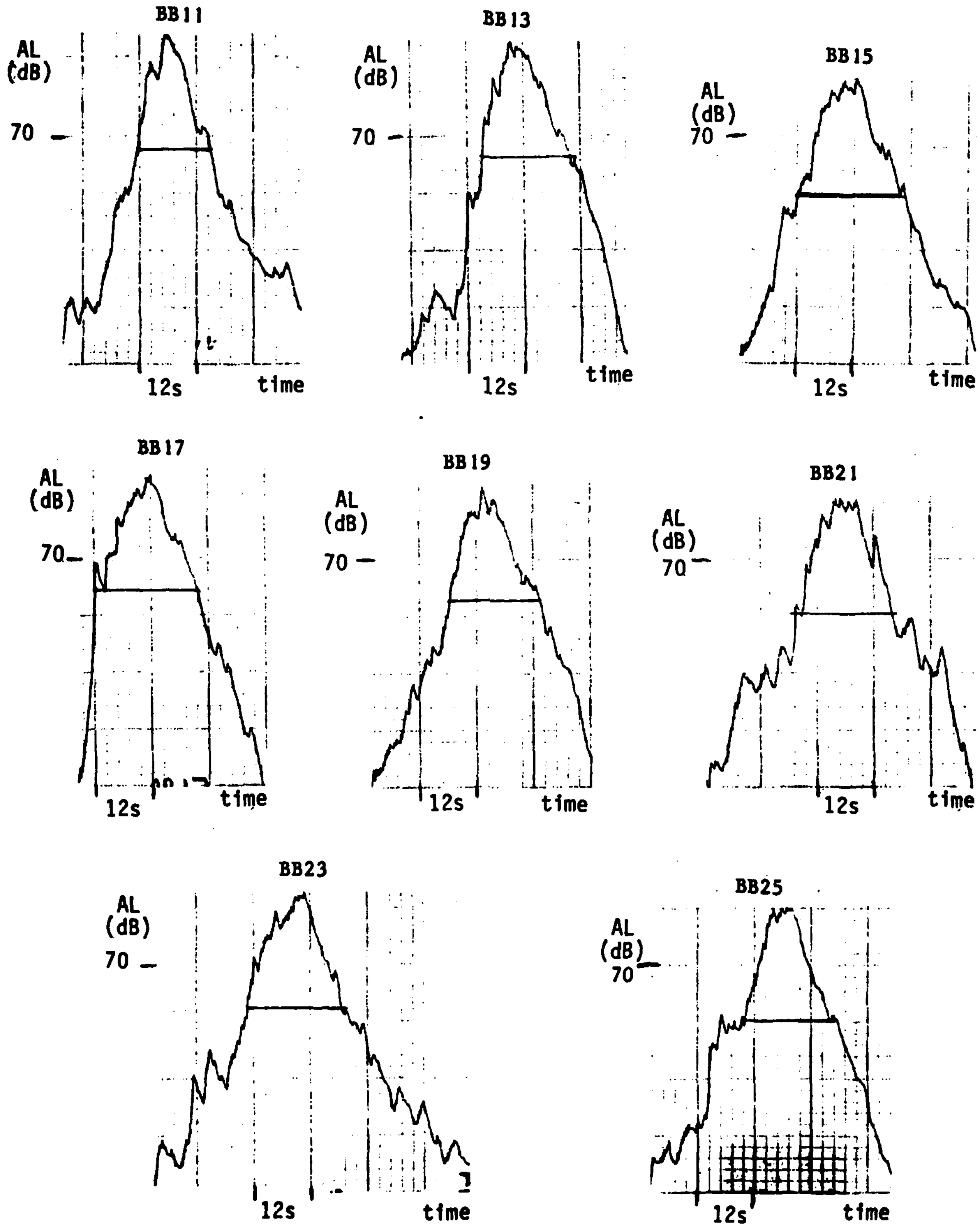


TABLE M.5

A-WEIGHTED TIME HISTORIES
TEST SERIES B
TAKEOFF -- TARGET IAS 57 kts. -- ICAO

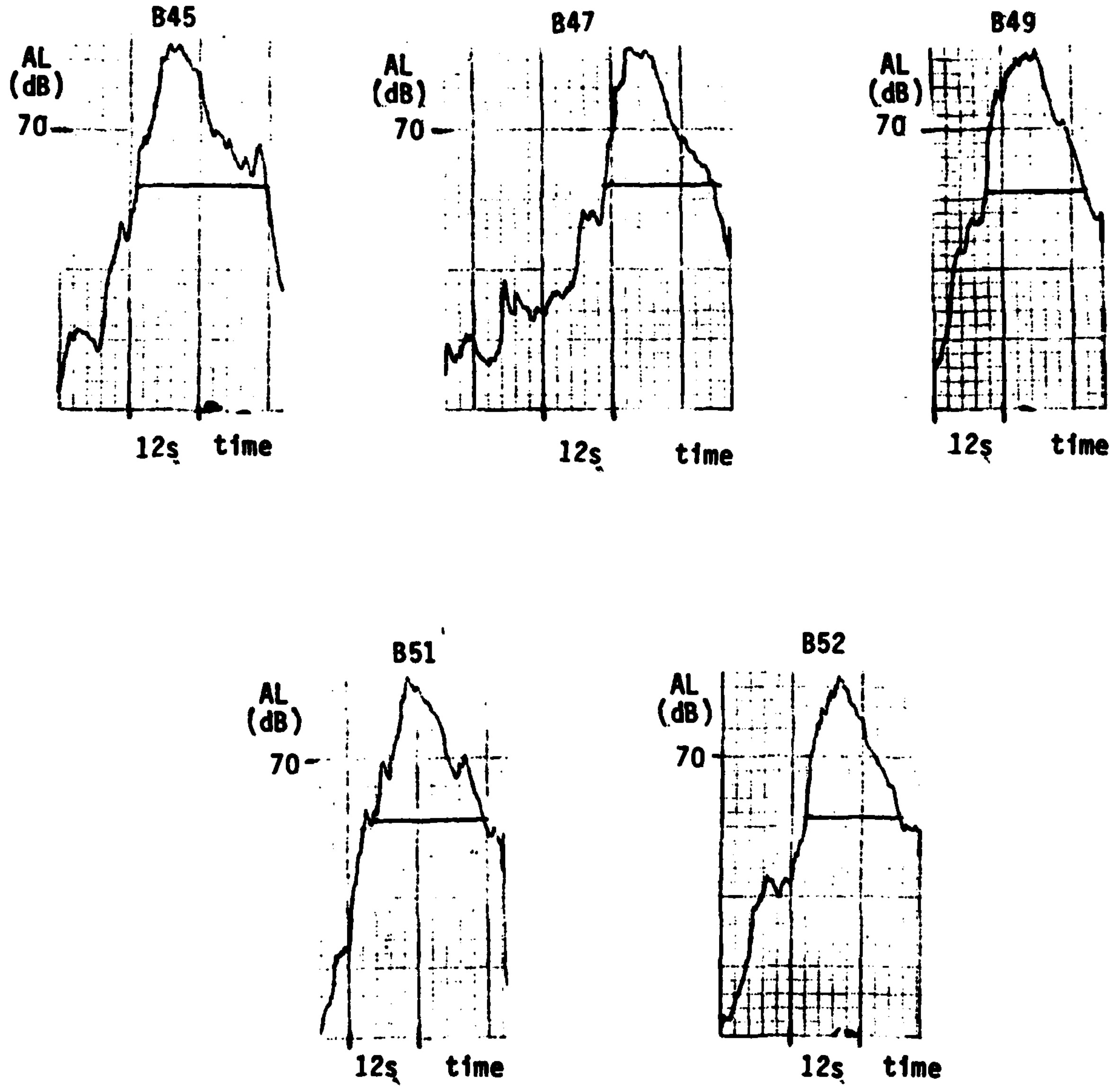


TABLE M.4

A-WEIGHTED TIME HISTORIES
TEST SERIES B
TAKEOFF -- TARGET IAS 57 kts. -- ICAO

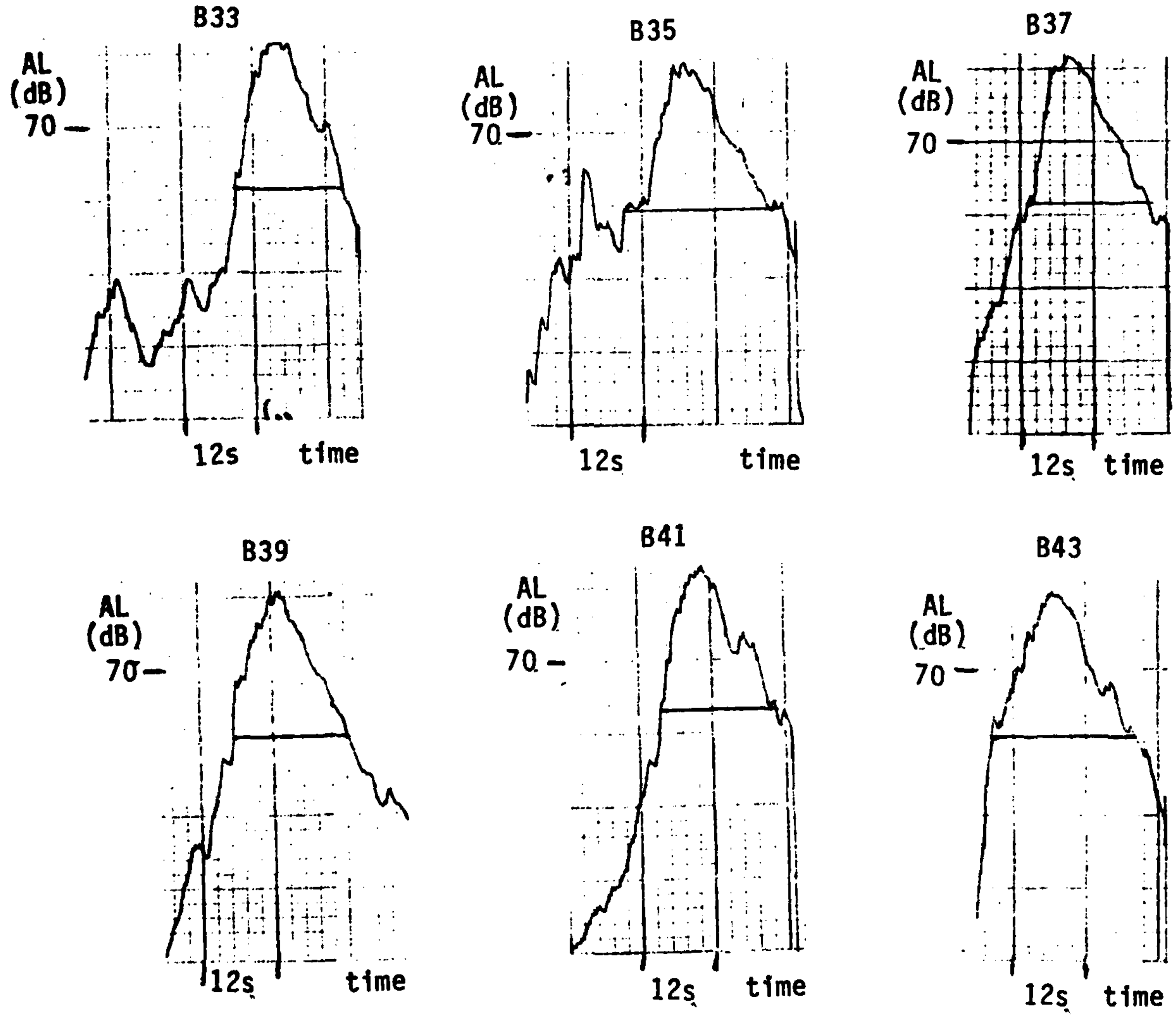


TABLE M.3

A-WEIGHTED TIME HISTORIES
TEST SERIES AZ
150 m. FLYOVER -- TARGET IAS 117 kts. -- 0.9 Vh

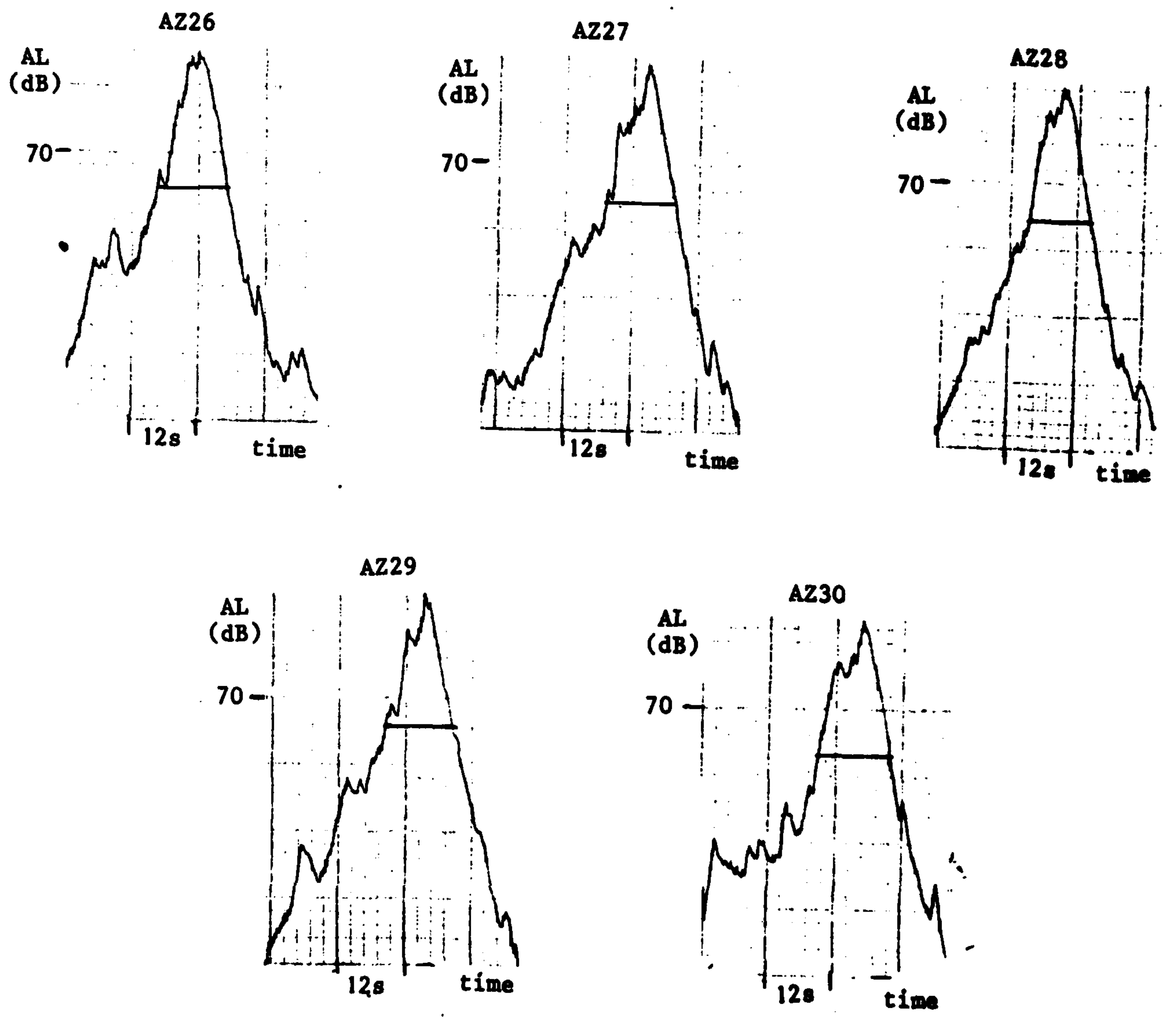


TABLE N.3.3

LEVEL FLYOVER PROPAGATION - SEL

SERIES AZ- 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	SEL WEIGHTED AVERAGE
SERIES AZ	N=	4	4	4	
469' (0.9Vh)	AVG SEL=	83.6	84.2	83.9	83.90
	STD DEV=	.4	.3	.4	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG SEL=	80.5	79.9	80.8	80.40
	STD DEV=	.3	.4	.3	

K= ΔdB / LOG (994/469) ΔdB = 3.50

K= 3.50/.326

K= 10.73

TABLE N.3.4

LEVEL FLYOVER PROPAGATION - PNLTM

SERIES AZ- 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNLTM WEIGHTED AVERAGE
SERIES AZ	N=	4	4	4	
469' (0.9Vh)	AVG PNLTM=	89.5	90.7	90	90.07
	STD DEV=	1.3	.8	.3	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG PNLTM=	83.6	83.4	83.8	83.60
	STD DEV=	.4	.7	.6	

K= ΔdB / LOG (994/469) ΔdB = 6.47

K= 6.47/.326

K= 19.82

TABLE N.3.1

LEVEL FLYOVER PROPAGATION - AL

SERIES AZ- 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	AL WEIGHTED AVERAGE
SERIES AZ	N=	4	4	4	
469' (0.9Vh)	AVG AL=	76.1	76.9	76.4	76.47
	STD DEV=	1.2	.6	.3	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG AL=	70.6	70.3	70.9	70.60
	STD DEV=	.7	.6	.7	

K= ΔdB / LOG (994/469) ΔdB = 5.87

K= 5.87/.326

K= 18.00

TABLE N.3.2

LEVEL FLYOVER PROPAGATION - EPNL

SERIES AZ- 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	EPNL WEIGHTED AVERAGE
SERIES AZ	N=	4	4	4	
469' (0.9Vh)	AVG EPNL=	86.6	87.7	87.3	87.20
	STD DEV=	.7	.2	.3	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG EPNL=	83.3	82.9	83.7	83.30
	STD DEV=	.2	.4	.3	

K= ΔdB / LOG (994/469) ΔdB = 3.90

K= 3.90/.326

K= 11.96

TABLE N.2.1

LEVEL FLYOVER PROPAGATION - AL

SERIES AA- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	AL WEIGHTED AVERAGE
SERIES AA	N=	6	6	6	
425' (0.9Vh)	AVG AL=	77.6	77.7	77.9	77.73
	STD DEV=	.5	.5	.5	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG AL=	70.6	70.3	70.9	70.60
	STD DEV=	.7	.6	.7	

K= ΔdB / LOG (994/425) ΔdB = 7.13

K= 7.13/.369

K= 19.33

TABLE N.2.2

LEVEL FLYOVER PROPAGATION - EPNL

SERIES AA- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	EPNL WEIGHTED AVERAGE
RIES AA	N=	6	6	6	
5' (0.9Vh)	AVG EPNL=	88.1	88.5	88.7	88.43
	STD DEV=	.2	.5	.3	
IES G	N=	7	7	7	
' (0.9Vh)	AVG EPNL=	83.3	82.9	83.7	83.30
	STD DEV=	.2	.4	.3	

K= ΔdB / LOG (994/425) ΔdB = 5.13

K= 5.13/.369

K= 13.91

TABLE N.1.5

LEVEL FLYOVER PROPAGATION - PNL

SERIES A - 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNL WEIGHTED AVERAGE
SERIES A	N=	7	7	7	
417' (0.9Vh)	AVG PNL=	90	89.9	90.4	90.10
	STD DEV=	.6	.4	.5	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG PNL=	82.4	82.1	82.6	82.37
	STD DEV=	.4	.5	.7	

K= ΔdB / LOG (994/417) ΔdB = 7.73

K= 7.73/.337

K= 20.50

TABLE N.1.3

LEVEL FLYOVER PROPAGATION - SEL

SERIES A - 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	SEL WEIGHTED AVERAGE
SERIES A	N=	7	7	7	
417' (0.9Vh)	AVG SEL	84.7	84.9	85.3	84.97
	STD DEV=	.5	.4	.4	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG SEL	80.5	79.9	80.8	80.40
	STD DEV=	.3	.4	.3	

K= ΔdB / LOG (994/417) ΔdB = 4.57

K= 4.57/.337

K= 12.11

TABLE N.1.4

LEVEL FLYOVER PROPAGATION - PNLTM

SERIES A - 150M LFO (0.9*VH) PILOT 1
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNLTM WEIGHTED AVERAGE
SERIES A	N=	7	7	7	
417' (0.9Vh)	AVG PNLTM=	91.2	91.1	91.6	91.30
	STD DEV=	.7	.4	.7	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG PNLTM=	83.6	83.4	83.8	83.60
	STD DEV=	.4	.7	.6	

K= ΔdB / LOG (994/417) ΔdB = 7.70

K= 7.70/.337

K= 20.41

TABLE N.4.3

LEVEL FLYOVER PROPAGATION - SEL

SERIES AY- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	SEL WEIGHTED AVERAGE
SERIES AY	N=	11	11	11	
477' (0.9Vh)	AVG SEL=	84.3	84.4	85.1	84.60
	STD DEV=	.6	.7	.6	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG SEL=	80.5	79.9	80.8	80.40
	STD DEV=	.3	.4	.3	

K= ΔdB / LOG (994/477) ΔdB = 4.20

K= 4.2/.319

K= 13.17

TABLE N.4.4

LEVEL FLYOVER PROPAGATION - PNLTM

SERIES AY- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNLTM WEIGHTED AVERAGE
SERIES AY	N=	11	11	11	
477' (0.9Vh)	AVG PNLTM=	90.4	90.8	91.5	90.90
	STD DEV=	1.2	1.1	1.1	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG PNLTM=	83.6	83.4	83.8	83.60
	STD DEV=	.4	.7	.6	

K= ΔdB / LOG (994/477) ΔdB = 7.30

K= 7.3/.319

K= 22.89

TABLE N.4.5

LEVEL FLYOVER PROPAGATION - PNL

SERIES AY- 150M LFO (0.9*VH) PILOT 2
SERIES G - 300M LFO (0.9*VH) PILOT 1

OPERATION MEAN ALT		MIC 5	MIC 1	MIC 4	PNL WEIGHTED AVERAGE
SERIES AY	N=	11	11	11	
477' (0.9Vh)	AVG PNL=	89.4	89.6	90.3	89.77
	STD DEV=	1.4	1.1	1.1	
SERIES G	N=	7	7	7	
994' (0.9Vh)	AVG PNL=	82.4	82.1	82.6	82.37
	STD DEV=	.4	.5	.7	

K= ΔdB / LOG (994/477) ΔdB = 7.40

K= 7.4/.319

K= 23.21

APPENDIX O

Empirical Propagation Coefficients

This appendix contains the empirical propagation coefficients indexed by emission angles. The average propagation constant for each of the three static tests--hover-in-ground, flight idle and ground idle--is also given. Data are presented for static operations conducted on two different days over soft and hard surfaces 150 meters and 300 meters from the helicopter.

☆U.S. GOVERNMENT PRINTING OFFICE: 1985 461 816 20512

TABLE 0.1

DATE: 8/27/84

EMPIRICAL PROPAGATION CONSTANTS (K)
for soft sites (4H&6H)

EMISSION ANGLE	HIGE K	FLT.IDLE K	GND.IDLE K
0	18.33	21.33	12.67
45	37.67	35.67	33.00
90	31.33	22.33	39.33
135	36.00	23.67	21.00
180	42.33	30.33	23.67
225	36.00	32.67	21.00
270	37.00	16.00	NA
315	27.33	19.67	32.67
AVERAGE	33.25	25.21	26.19

TABLE 0.2

DATE: 8/29/84

EMPIRICAL PROPAGATION CONSTANTS (K)
for soft sites (4H&6H)

EMISSION ANGLE	HIGE K	FLT.IDLE K	GND.IDLE K
0	23.67	27.33	39.00
45	30.33	37.00	46.00
90	27.67	30.00	17.33
135	28.67	37.67	40.00
180	26.00	31.33	42.33
225	23.00	25.33	NA
270	28.67	22.67	16.00
315	30.00	35.67	25.33
AVERAGE	27.50	30.87	32.28

TABLE 0.3

DATE: 8/27/84

EMPIRICAL PROPAGATION CONSTANTS (K)
for hard sites (1H&5H)

EMISSION ANGLE	HIGE K	FLT.IDLE K	GND.IDLE K
0	38.00	40.00	31.67
45	38.33	32.00	26.67
90	46.67	36.00	38.00
135	33.67	49.67	30.67
180	31.33	44.67	27.00
225	45.33	53.33	25.33
270	48.33	48.33	40.00
315	55.00	43.33	35.00
AVERAGE	42.08	43.42	31.79

TABLE 0.4

DATE: 8/29/84

EMPIRICAL PROPAGATION CONSTANTS (K)
for hard sites (1H&5H)

EMISSION ANGLE	HIGE K	FLT.IDLE K	GND.IDLE K
0	11.00	31.00	24.33
45	36.33	34.67	NA
90	38.33	36.67	24.33
135	35.33	32.33	22.67
180	42.00	27.67	28.00
225	26.67	34.00	NA
270	36.00	36.33	35.33
315	27.00	26.67	31.67
AVERAGE	31.58	32.42	27.72

END

FILMED

11-85

DTIC